



www.news.navy.mil

ALL HANDS

MAGAZINE OF THE U.S. NAVY

JANUARY 2005

OWNER'S & OPERATOR'S MANUAL



ORDER OF PRECEDENCE PULL OUT – PG.23



[On the Front Cover]
Photo by PH1 Shane T. McCoy

[Next Month]
All Hands boards USS *Halyburton* (FFG 40) while her crew performs counter-drug ops.

All Hands (USPS 372-970; ISSN 0002-9577) Number 1053 is published monthly by the Naval Media Center, Publishing Department, 2713 Mitscher Rd. S.W., Anacostia Annex, D.C. 20373-5819. Periodicals postage paid at Washington, D.C., and at additional mailing offices. **Subscriptions:** For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 or call 202/512-1800. Subscription prices are: \$36 (domestic) / \$45 (foreign); \$6 (single copy domestic) / \$7.50 (single copy foreign). **Postmaster:** Send address changes to All Hands, Naval Media Center, Publishing Department 2713 Mitscher Rd., S.W., Anacostia Annex, D.C. 20373-5819 **Editorial Offices:** Send submissions and correspondence to Naval Media Center Publishing Department, ATTN: Editor, 2713 Mitscher Rd., S.W., Anacostia Annex, D.C. 20373-5819 Tel: DSN 288-4171 or 202/433-4171 Fax: DSN 288-4747 or 202/433-4747 E-Mail: allhands@mediacen.navy.mil Message: NAVMEDIACEN WASHINGTON DC //32// **Authorization:** The Secretary of the Navy has determined this publication is necessary in the transaction of business required by law of the Department of the Navy. Funds for printing this publication have been approved by the Navy Publications and Printing Committee.



OWNER'S & OPERATOR'S MANUAL

2 Bases
Take a look and see where your next assignment could be or where the nearest base is located—from coast to coast and around the world.

4 Unified Commands
The Navy operates 24/7 around the globe.

6 Warfare Pins & Badges
Today's Sailors are more qualified and specialized than ever before. This chart will help you identify their specialty.

8 Enlisted Ratings
Ever wonder what a particular Sailor does for a living? There's a story to be found on every Sailor's sleeve.

10 Ships
From initiating the first offensive strikes in the littoral to defending the strike group, Navy haze gray platforms are battle-tested and at the ready on the front lines.

18 Military Sealift Command Ships
Pre-positioned and forward deployed, these lifeline vessels supply everything from ammo to gas and Humvees to docks.

20 Special Warfare
Special warfare Sailors, the unseen warriors, continue to contribute to the Navy's global mission.

22 Monthly Basic Pay Table
Check out our pay chart and see what this year's pay raise means to you.

23 Special Pull-out: Order of Precedence and Armed Forces Ranks
Look no further. These charts explain it all in a special pullout section—from seaman to admiral and everything in between.

27 Reserve Map
One key to the Navy's success is the coordinated efforts between Reserve and active-duty forces.

28 Submarines
The "silent service" is everywhere.

31 Aircraft Carriers
These floating power-houses are sovereign U.S. territory, ready to execute war and diplomacy with awesome force.

32 Aircraft
Whether aboard one of the Navy's carriers or at a shore facility, U.S. Navy aircraft remain the best in the world.

39 Seabees
The Seabees "can do" spirit is found around the world. Check out how they are organized.

40 Weapons
The Navy has a wide variety of modern weapons and weapon systems. Today's Sailors are using cutting-edge technology to put ordnance on target.

46 Education
The Revolution in Training continues to align Sailor's training and education needs with the fleet through "Sea Warrior".

48 MCPON Reading List
If you have some spare time, the MCPON has a book for you. The books on the MCPON's Naval Heritage/Core Values Reading Guide can provide hours of entertainment, education and professional development.

[Number 1053]

AllHANDS

January

Number 1053 • January 2005
www.navy.mil

Secretary of the Navy
The Honorable Gordon R. England
Chief of Naval Operations
ADM Vern Clark
Chief of Information
RADM T. L. McCreary
Commander, Naval Media Center
CAPT Joseph F. Gradisher
Chief of Publishing
CDR Ed Austin
Deputy Chief of Publishing
+ Print Media Coordinator
LT Bill Couch

EDITORIAL

Editor
Marie G. Johnston
Managing Editor
JOCS James Slater
Assistant Editor
Stephanie N. Collins
Photo Editors
PH1 (AW) Shane T. McCoy
PH3 Todd Frantom
Editorial Staff
JO1 (SW) Monica Darby
JO1 (SW) Hendrick Dickson
JO1 (SCW/SS) James Pinsky
JO1 Charles L. Ludwig
JO2 Kimberly Rodgers

DISTRIBUTION

Hank Lloyd

PUBLICATION & WEB DESIGN

R + B Design Firm
Graphic Designers
Laura Muncy
Kevin Richards
Digital Prepress Specialist
Lisa J. Smith

PRINTING

Universal Printing Company
GPO Printing Specialist
John Kennedy

AllHANDS
Recipient of the following
Awards of Magazine Excellence
for 2000-2004:



Bases Worldwide

UNITED STATES

California

- Naval Air Weapons Station (NAWS) China Lake
- Naval Base (NB) Coronado
- Naval Air Facility (NAF) El Centro
- Naval Air Station (NAS) Lemoore
- NB Point Loma (San Diego)
- NB Ventura County
- Naval Postgraduate School, Monterey
- Naval Station (NS) San Diego
- Naval Weapons Station (NWS) Seal Beach
- Naval Support Activity (NSA) Corona

Connecticut

- Naval Submarine Base (SUBASE) New London

District of Columbia

- Washington Navy Yard

Florida

- NAS Jacksonville
- NAS Key West
- NS Mayport
- NSA Panama City
- NAS Pensacola
- NAS Whiting Field
- NSA Orlando

Georgia

- NAS Atlanta
- SUBASE Kings Bay
- NSA Athens

Hawaii

- NS Barking Sands
- Naval Computer and Telecommunications Area Master Station, Eastern Pacific, Wahiawa
- NS Pearl Harbor
- Pacific Missile Range Facility, Kauai



Photo by PH1 Anthony M. Koch

Illinois

- NS Great Lakes

Indiana

- NSA Crane

Louisiana

- NAS Joint Reserve Base New Orleans
- NAS New Orleans

Maine

- NAS Brunswick

Maryland

- NS Annapolis
- U.S. Naval Academy, Annapolis
- NSA Indian Head
- NSA Carderock
- Naval Support Facility (NSF) Thurmont
- NAS Patuxent River
- NAF Washington

Mississippi

- Construction Battalion Center (CBC) Gulfport
- NAS Meridian
- NS Pascagoula

Nevada

- NAS Fallon

▲ Naval Station Norfolk

New Hampshire

- Portsmouth Naval Shipyard, Kittery, Maine

New Jersey

- Naval Weapons Station (NAVWPNSTA) Earle
- Naval Air Engineering Station (NAES) Lakehurst

New York

- Naval Support Unit (NSU) Saratoga Springs

Pennsylvania

- NAS Joint Reserve Base Willow Grove
- NSA Mechanicsburg
- NSWC Philadelphia

Rhode Island

- NS Newport

South Carolina

- NAVWPNSTA Charleston

Tennessee

- NSA Mid-South, Millington

Texas

- NAS Corpus Christi
- NAS Joint Reserve Base, Ft. Worth
- NS Ingleside
- NAS Kingsville

Virginia

- Naval Amphibious Base (NAB) Little Creek
- NSA Dahlgren
- NS Norfolk
- Norfolk Naval Shipyard, Portsmouth
- NSA Norfolk
- NAS Oceana, Virginia Beach
- NAVWPNSTA Yorktown
- NSA Wallops Island

Washington State

- NB Kitsap
- NS Everett
- NAS Whidbey Island
- Puget Sound Naval Shipyard
- Naval Undersea Warfare Center (NUWC) Keyport
- Naval Magazine Indian Head Island

West Virginia

- NSGA Sugar Grove

WORLDWIDE

Bahamas

- NUWC Bahamas (Andros Island)

Bahrain

- NSA Manama

Cuba

- NS Guantanamo Bay

Diego Garcia

- NSF British Indian Ocean Territories (BIOT)

Greece

- NSA Souda Bay, Crete

Guam/Marianas

- Commander, Naval Forces Marianas

Iceland

- NAS Keflavik

Italy

- NAS Sigonella
- NSA Gaeta
- NSA La Maddalena
- NSA Naples

Japan

- Commander Fleet Activities (CFA) Sasebo
- NAF Atsugi
- CFA Yokosuka
- NFA Misawa
- CFA Okinawa

Singapore

- Naval Regional Contracting Center, Singapore

South Korea

- CFA Chinhae

Spain

- NS Rota

United Kingdom

- Joint Military Facility, St. Mawgan
- Naval Activities (NA) London
- NAF Mildenhall

Source: Commander, Navy Installations

▼ USS Curtis Wilbur (DDG 54) and USS John S. McCain (DDG 56) are moored with a U.S. submarine at the Yokosuka Naval Base.

Photo by PH3 Todd Frantom



Unified Commands

NAVAL COMPONENT COMMANDS AND NUMBERED FLEETS

The map depicts the Unified Commands having geographic areas of responsibility. The Navy supports those regional Unified Commands with component and numbered fleets.

U.S. NORTHERN COMMAND (USNORTHCOM)

U.S. Fleet Forces Command

Headquarters: Norfolk

Mission: Commander, U.S. Fleet Forces Command (CFFC) organizes, mans, trains and equips naval forces for assignment to combatant commanders; and to articulate fleet war-fighting and readiness requirements to the Chief of Naval Operations. CFFC is responsible for the overall coordination, establishment and implementation of integrated requirements and policies for manning, equipping and training Atlantic and Pacific Fleet units during the inter-deployment training cycle. In addition to commanding the former U.S. Atlantic Fleet, CFFC serves as Naval Component Commander for U.S. Joint Forces Command, U.S. Strategic Command and U.S. Northern Command.

U.S. 2nd Fleet/ NATO Striking Fleet Atlantic

Headquarters: Norfolk

Mission: Commander, U.S. 2nd Fleet is responsible for U.S. Navy operations and defense of U.S. interests in the North Atlantic Ocean, and is also responsible for the training/certification of East Coast Carrier Strike Groups and Expeditionary Strike Groups. Commander, Striking Fleet Atlantic commands a multinational-force whose primary mission is to lead a combined joint task force. It is the only NATO-afloat headquarters capable of conducting complex military and peace support operations.

Area of Operations (AO): The North Atlantic Ocean

Flagship: Rotational

U.S. PACIFIC COMMAND (USPACOM)

U.S. Pacific Fleet

Headquarters: Pearl Harbor

Mission: Commander, U.S. Pacific Fleet (COMPACFLT), operates in support of the USPACOM Theater Security Strategy, and provides interoperable, trained and combat-ready naval forces to Commander, USPACOM and other U.S. combatant commanders, as required. In addition to these traditional Title X responsibilities, COMPACFLT has an increasing operational role as Commander, Joint Task Force 519. This mission requires COMPACFLT to not only maintain the training and readiness of the Joint Task Force headquarters staff, but also command the joint force during times of conflict, crisis or war.

U.S. 3rd Fleet

Headquarters: San Diego

Mission: Commander, U.S. 3rd Fleet is responsible for U.S. Navy operations and defense of U.S. interests in the Pacific Ocean from the North Pole to the South Pole and from the continental West Coast to the international timeline. The U.S. 3rd Fleet is responsible for the training/certification of West Coast Carrier Strike Groups and Expeditionary Strike Groups.

AO: The Pacific Ocean from CONUS West Coast to the International Date Line.

U.S. 7th Fleet

Headquarters: Yokosuka, Japan

Mission: Commander, U.S. 7th Fleet's responsibility is to defend and protect the territory, citizens, commerce, sea lanes, allies and other vital interests of the United States; deter aggression with capable, flexible and mobile U.S. naval forces, cooperating closely with other U.S. military services and the forces of allied and friendly nations; if deterrence fails, conduct prompt and

sustained combat operations to terminate hostilities on terms favorable to the United States and allies. Commander, U.S. 7th Fleet wears three hats: as operational commander for all naval forces in the region; as a Joint Task Force commander in the event of natural disaster or joint military operation; and as the Combined Naval Component Commander for the defense of the Korean peninsula; in the event of hostilities, all friendly naval forces in the theater would fall under 7th Fleet control.

AOR: Fifty-two million square miles of the Pacific and Indian Oceans, from the international date line to the east coast of Africa, and from the Kuril Islands in the north to the Antarctic in the south.

Flagship: USS *Blue Ridge* (LCC 19)

U.S. SOUTHERN COMMAND (USSOUTHCOM)

U.S. Naval Forces Southern Command

Headquarters: Mayport, Fla.

Mission: As the naval component to U.S.

Southern Command, Commander, U.S. Naval Forces Southern (COMUSNAVSO) Command commands U.S. naval forces and interacts with partner nations to shape the environment within SOUTHCOM's area of responsibility by developing and executing security cooperation initiatives and conducting counter-drug operations to promote democracy, stability and collective approaches to regional security. When required, COMUSNAVSO responds to crisis to maintain regional stability and protect U.S. national interests, and prepares to meet future hemispheric challenges.

AOR: Nearly 16 million square nautical miles of ocean in the Caribbean, Eastern Pacific and Southern Atlantic, in addition to 30 nations, and 12 dependencies totaling 1/6 of the world's landmass.

U.S. CENTRAL COMMAND (USCENTCOM)

U.S. Naval Forces Central Command/U.S. 5th Fleet

Headquarters: Manama, Bahrain

Mission: To protect American lives abroad, promote national interests, maintain freedom of the seas, support the global war on terrorism, respond to contingencies and maintain security cooperation with allies and coalition partners.

AOR: Approximately 7.5 million square-mile region comprising 27 countries within central Asia, the Middle East, and eastern Africa, and six major bodies of water including the Red Sea, Gulf of Aden, Persian Gulf, Gulf of Oman, Indian Ocean and the Arabian Sea.

U.S. EUROPEAN COMMAND (USEUCOM)

U.S. Naval Forces European Command (COMUSNAVEUR)/U.S. 6th Fleet

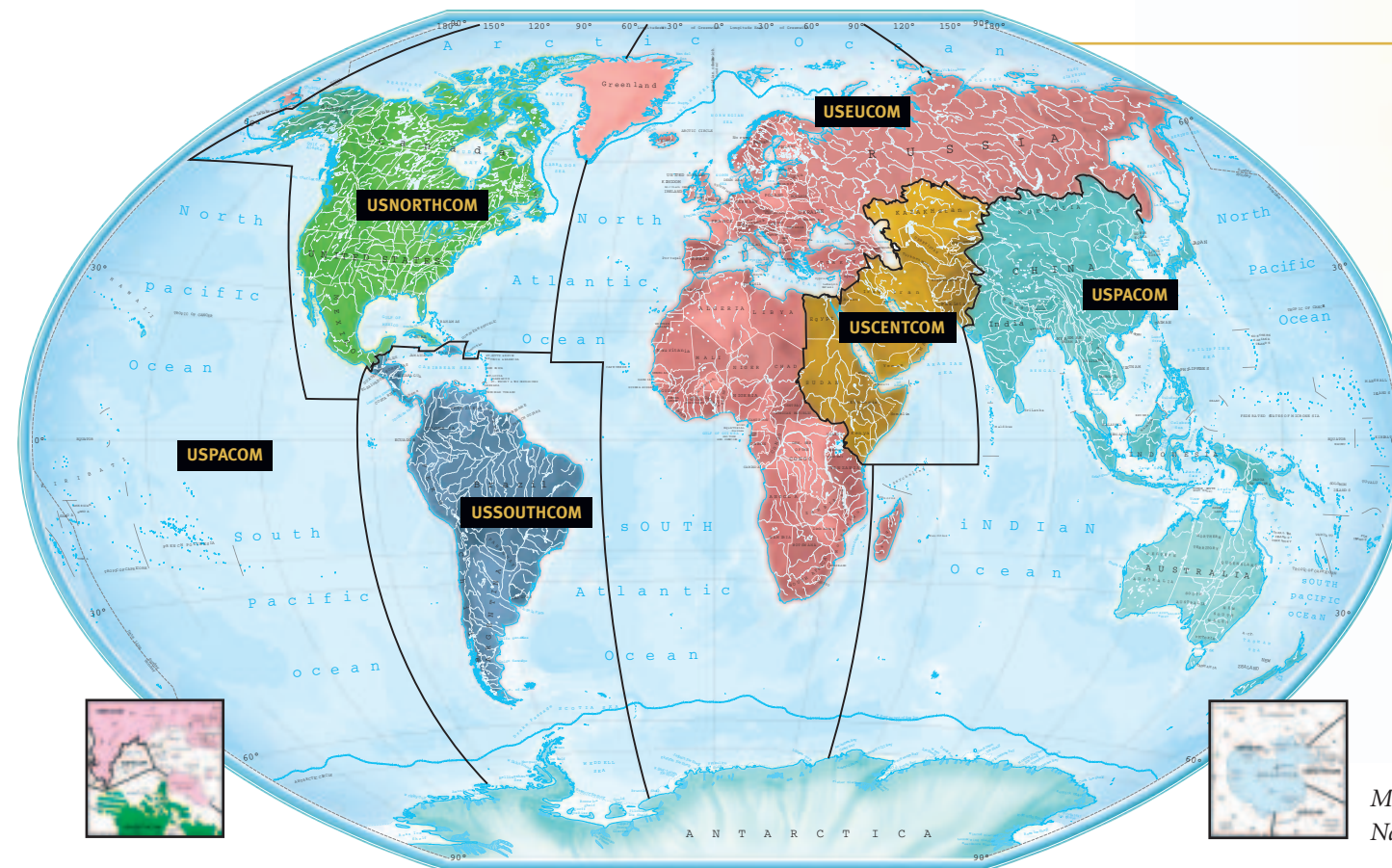
Headquarters: With its headquarters in London, COMUSNAVEUR directs all its naval operations through Commander, U.S. 6th Fleet based in Naples, Italy

Mission: To be persuasive in peace, decisive in war and preeminent in any conflict. To achieve this we conduct joint and combined operations in support of unified and allied commanders. We operate, exercise and sustain combat-ready maritime forces to defeat those enemies who would do harm to our nation or its allies. We conduct theater naval security cooperation to promote coalition building and foster regional security in support of U.S. national interests.

AOR: The area of responsibility of the 6th Fleet covers more than 21 million square miles and includes 91 countries and territories. This territory extends from the Cape of Norway, through the waters of the Baltic and Mediterranean Seas, most of Europe, parts of the Middle East to the Cape of Good Hope in South Africa.

Flagship: USS *La Salle* (AGF 3)*

*USS *Mount Whitney* (LCC 20) is scheduled to replace USS *La Salle* in February 2005.



Maps courtesy of the National Geographic Society.

Warfare Pins/Badges



Source: U.S. Navy Uniform Regulation; Navy Uniform Board



**OWNER'S &
OPERATOR'S
MANUAL**

Enlisted Ratings



AB
Aviation Boatswain's Mate
ABE – Equipment
ABF – Fuel
ABH – Handling



AC
Air Traffic Controller



AD
Aviation Machinist's Mate



AE
Aviation Electrician's Mate



AG
Aerographer's Mate



AM
Aviation Structural Mechanic
AME – Equipment



AO
Aviation Ordnanceman



AS
Aviation Support Equipment Technician



AT
Aviation Electronics Technician



AW
Aviation Warfare Systems Operator



AZ
Aviation Maintenance Administrationman



BM
Boatswain's Mate



BU
Builder



CE
Construction Electrician



CM
Construction Mechanic



CS
Culinary Specialist



CT
Cryptologic Technician
CTA – Administrative
CTI – Interpretive
CTM – Maintenance
CTO – Communications
CTR – Collection
CTT – Technical



DC
Damage Controlman



DK
Disbursing Clerk



SK
Storekeeper



ST
Sonar Technician
STG – Surface
STS – Submarine



SW
Steelworker



TM
Torpedoman's Mate



UT
Utilitiesman



DM
Illustrator/Draftsman



DT
Dental Technician



EA
Engineering Aide



EM
Electrician's Mate



YN
Yeoman



AN
Airman



FN
Fireman



SN
Seaman



EN
Engineman



EO
Equipment Operator



ET
Electronics Technician



FC
Fire Controlman



FT
Fire Control Technician



GM
Gunner's Mate



GS
Gas Turbine System Technician
GSE – Electrical
GSM – Mechanical



HM
Hospital Corpsman



HT
Hull Maintenance Technician



IC
Interior Communications Electrician



IS
Intelligence Specialist



IT
Information Systems Technician



JO
Journalist



LI
Lithographer



LN
Legalman



MA
Master-at-Arms



MM
Machinist's Mate



MN
Mineman



MR
Machinery Repairman



MT
Missile Technician



MU
Musician



NC
Navy Counselor



OS
Operations Specialist



PC
Postal Clerk



PH
Photographer's Mate



SH
Ship's Serviceman



PN
Personnelman



PR
Aircrew Survival Equipmentman



QM
Quartermaster



RP
Religious Program Specialist



SK
Storekeeper



ST
Sonar Technician
STG – Surface
STS – Submarine



SW
Steelworker



TM
Torpedoman's Mate



UT
Utilitiesman

Enlisted Sailors wear their job specialty in plain sight. Rating badges, worn on the left sleeve, consist of an eagle (called a “crow”) chevrons indicating the wearer’s rate and a specialty mark indicating rating. While some of these ratings have historical significance (such as Boatswain’s Mate), others show the evolution of naval technology in modern times, such as the GS (Gas Turbine System Technicians).

source: www.staynavy.navy.mil

Ships

CRUISERS

Modern U.S. Navy guided-missile cruisers perform primarily in a battle force role. These ships are multi-mission, anti-air warfare (AAW), anti-submarine warfare (ASW), long-range strike and anti-surface warfare (ASUW) surface combatants capable of supporting carrier and expeditionary strike groups (ESG), amphibious forces, or of operating independently and as flagships of surface action groups.

Ticonderoga-class

Power Plant: Four General Electric LM 2500 gas turbine engines; Two shafts, 80,000 shaft horsepower total.
Length: 567 feet
Beam: 55 feet
Displacement: 9,600 tons full load
Speed: 30 plus knots (34.5+ mph)
Aircraft: Two SH-60 *Sea Hawk* (LAMPS III)
Crew: 364 (24 officers, 340 enlisted)
Armament: MK 26 missile launcher (CG 49 through CG 51); *Standard* Missile (MR) or MK 41 vertical launching system (CG 52 through CG 73); *Standard* Missile (MR); Vertical Launch ASROC (VLA) Missile; *Tomahawk* Cruise Missile; Six MK-46 torpedoes (from two triple mounts); Two MK 45 5-inch/54 caliber lightweight guns; Two *Phalanx* close-in-weapons systems (CIWS)

Ships:
USS *Vincennes* (CG 49)
USS *Thomas S. Gates* (CG 51)
USS *Bunker Hill* (CG 52)
USS *Mobile Bay* (CG 53)
USS *Antietam* (CG 54)
USS *Leyte Gulf* (CG 55)
USS *San Jacinto* (CG 56)
USS *Lake Champlain* (CG 57)
USS *Philippine Sea* (CG 58)
USS *Princeton* (CG 59)

USS *Normandy* (CG 60)
USS *Monterey* (CG 61)
USS *Chancellorsville* (CG 62)
USS *Cowpens* (CG 63)
USS *Gettysburg* (CG 64)
USS *Chosin* (CG 65)
USS *Hue City* (CG 66)
USS *Shiloh* (CG 67)
USS *Anzio* (CG 68)
USS *Vicksburg* (CG 69)
USS *Lake Erie* (CG 70)
USS *Cape St. George* (CG 71)
USS *Vella Gulf* (CG 72)
USS *Port Royal* (CG 73)

AMPHIBIOUS ASSAULT

Operating as part of an Expeditionary Strike Group (ESG), modern U.S. Navy amphibious assault ships are called upon to perform as primary landing ships for assault operations of Marine expeditionary units. These ships use Landing Craft Air Cushion (LCAC), conventional landing craft and helicopters to move Marine assault forces ashore. In a secondary role, using AV-8B *Harrier* aircraft and anti-submarine warfare helicopters, these ships perform sea control and limited power projection missions.

Tarawa-class

Power Plant: Two boilers, two geared steam turbines, two shafts, 70,000 total shaft horsepower
Length: 820 feet
Beam: 106 feet
Displacement: 39,400 tons full load
Speed: 24 knots (27.6 miles per hour)
Aircraft, depending on mission: 12 CH-46 *Sea Knight* helicopters; four CH-53E *Sea Stallion* helicopters; six AV-8B *Harrier* attack aircraft; three UH-1N *Huey* helicopters; four AH-1W *Super Cobra* helicopters
Crew: 964 (82 officers, 882 enlisted)
Marine detachment: 1,900 plus



▲ USS Vincennes (CG 49).

Armament: Two *RAM* launchers; two *Phalanx* 20 mm CIWS mount; three .50 cal. machine guns; four 25 mm MK-38 machine guns

Ships:
USS *Tarawa* (LHA 1)
USS *Saipan* (LHA 2)
USS *Belleau Wood* (LHA 3)
USS *Nassau* (LHA 4)
USS *Peleliu* (LHA 5)

Wasp-class

Power Plant: Two boilers, two geared steam turbines, two shafts, 70,000 shaft horsepower; LHD 8-two gas turbines, 70,000 shaft horsepower, two auxiliary propulsion motors (5,000 hp each)
Length: 844 feet
Beam: 106 feet
Displacement: LHD 5 1-4: 40,650 tons full load; LHD 5 5-7: 40,358 tons full load; LHD 8: 41,772 tons full load
Speed: 20+ knots (23.5+ mph)
Aircraft, depending on mission: 12 CH-46 *Sea Knight* helicopters; Four CH-53E



Photo by PHAN Bo J. Flannigan

Sea Stallion helicopters; Six AV-8B *Harrier* attack aircraft; Three UH-1N *Huey* helicopters; Four AH-1W *Super Cobra* helicopters
Crew: 1,108 (104 officers, 1,004 enlisted.)
Marine detachment: 1,894
Armament: Two *RAM* launchers; two NATO *Sea Sparrow* launchers; three 20mm *Phalanx* CIWS mounts (two on LHD 5-7); four .50 cal. machine guns; four 25mm MK 38 machine guns (LHD 5-7 have three 25 mm Mk 38 machine guns)

Ships:
USS *Wasp* (LHD 1)
USS *Essex* (LHD 2)
USS *Kearsarge* (LHD 3)
USS *Boxer* (LHD 4)
USS *Bataan* (LHD 5)
USS *Bonhomme Richard* (LHD 6)
USS *Iwo Jima* (LHD 7)

DESTROYERS

Destroyers and guided-missile destroyers operate in support of carrier and expeditionary strike groups, surface action groups, amphibious groups and replenishment groups. Destroyers primarily perform anti-submarine warfare duty while guided-missile destroyers are multi-mission [long-range strike, anti-air warfare (AAW), anti-submarine warfare (ASW) and anti-surface warfare (ASUW)] surface combatants. The addition of the MK-41 Vertical Launch System or *Tomahawk*



Photo by PHAN Travis M. Burns

Armored Box Launchers (ABL 5) to many *Spruance*-class destroyers has greatly expanded the role of the destroyer in strike warfare.

Spruance-class

Power Plant: Four General Electric LM 2500 gas turbines, two shafts, 80,000 shaft horsepower
Length: 563 feet
Beam: 55 feet
Displacement: 8,040 tons full load
Speed: In excess of 30 knots (34.5+ mph)
Aircraft: Two SH-60 *Seahawk* LAMPS III helicopters
Crew: 382 (30 officers, 352 enlisted)
Armament: eight *Harpoon* (from two quad launchers), *Tomahawk*, VLS or ABL; Vertical Launch ASROC (VLA) missiles; six MK-46 torpedoes (from 2 triple tube mounts); two 5-inch/54 caliber MK-45 lightweight gun; two 20mm *Phalanx* CIWS. *Kidd*-class only: *Standard* missiles; NATO *Sea Sparrow* point defense AAW missiles

Ships:
USS *Spruance* (DD 963)
USS *Stump* (DD 978)
USS *Cushing* (DD 985)
USS *O'Bannon* (DD 987)

◀ USS Nassau (LHA 4)

Photo by PH1 Anthony M. Koch

▲ USS Essex (LHD 2) (foreground) and USS Belleau Wood (LHA 3).

Arleigh Burke-class

Power Plant: Four General Electric LM 2500-30 gas turbines; two shafts, 100,000 total shaft horsepower, SPY-1 Radar and Combat System Integrator
Length: Flights I and II (DDG 51-78): 505 feet; Flight IIA (DDG 79-98): 509 feet
Beam: 59 feet
Displacement: Hulls 51 through 71: 8,315 tons full load; Hulls 72 through 78: 8,400 tons full load; Hulls 79 and on: 9,200 tons full load
Speed: In excess of 30 knots (34.5+ mph)
Aircraft: None. LAMPS III electronics installed on landing deck for coordinated DDG 51/helo ASW operations
Crew: 323 (23 officers, 300 enlisted)
Armament: *Standard* missile; *Harpoon*; Vertical Launch ASROC (VLA) missiles; *Tomahawk*; six MK-46 torpedoes (from two triple tube mounts); one 5-inch/54 caliber MK-45 lightweight gun; two 20mm *Phalanx* CIWS

OWNER'S & OPERATOR'S MANUAL

Ships

- Ships:**
USS *Arleigh Burke* (DDG 51)
USS *Barry* (DDG 52)
USS *John Paul Jones* (DDG 53)
USS *Curtis Wilbur* (DDG 54)
USS *Stout* (DDG 55)
USS *John S. McCain* (DDG 56)
USS *Mitscher* (DDG 57)
USS *Laboon* (DDG 58)
USS *Russell* (DDG 59)
USS *Paul Hamilton* (DDG 60)
USS *Ramage* (DDG 61)
USS *Fitzgerald* (DDG 62)
USS *Stethem* (DDG 63)
USS *Carney* (DDG 64)
USS *Benfold* (DDG 65)
USS *Gonzalez* (DDG 66)
USS *Cole* (DDG 67)
USS *The Sullivans* (DDG 68)
USS *Milius* (DDG 69)
USS *Hopper* (DDG 70)
USS *Ross* (DDG 71)
USS *Mahan* (DDG 72)
USS *Decatur* (DDG 73)
USS *McFaul* (DDG 74)
USS *Donald Cook* (DDG 75)
055 *Higgins* (DDG 76)
USS *O’Kane* (DDG 77)
USS *Porter* (DDG 78)
USS *Oscar Austin* (DDG 79)
USS *Roosevelt* (DDG 80)
USS *Winston S. Churchill* (DDG 81)
USS *Lassen* (DDG 82)
USS *Howard* (DDG 83)
USS *Bulkeley* (DDG 84)
USS *McCampbell* (DDG 85)
USS *Shoup* (DDG 86)
USS *Mason* (DDG 87)
USS *Preble* (DDG 88)
USS *Mustin* (DDG 89)
USS *Chafee* (DDG 90)
USS *Pinckney* (DDG 91)
USS *Momsen* (DDG 92)
USS *Chung-Hoon* (DDG 93)
Nitze (DDG 94)*
USS *James E. Williams* (DDG 95)
Bainbridge (DDG 96)*
Halsey (DDG 97)*



Photo by AN Maebel Y. Tinoko

▲ USS *Rentz* (FFG 46)

- Forrest Sherman* (DDG 98)*
Farragut (DDG 99)*
Kidd (DDG 100)*
Gridley (DDG 101)*
Sampson (DDG 102)*
Truxton (DDG 103)*
Sterett (DDG 104)*
Dewey (DDG 105)*

FRIGATES

Frigates fulfill a Protection of Shipping (POS) mission as Anti-Submarine Warfare (ASW) combatants for amphibious expeditionary forces, underway replenishment groups and merchant convoys.

Oliver Hazard Perry-class

Power Plant: Two General Electric LM 2500 gas turbine engines; 1 shaft, 41,000 shaft horsepower total.
Length: 445 feet; 453 feet with LAMPS III modification.
Beam: 45 feet
Displacement: 4,100 tons full load
Speed: 29 plus knots (33.4+ mph)
Aircraft: Two SH-60 (LAMPS III) in FFG 8, 28, 29, 32, 33, 36-61; One SH-2 (LAMPS MK-I) in FFG 9-19, 30, 31.
Crew: 215 (17 officers, 198 enlisted)
Armament: Six MK-46 torpedoes (from two triple mounts); one 3-inch/ 62 caliber MK-75 rapid fire gun; one *Phalanx* (CIWS)

- Ships:**
USS *McInerney* (FFG 8)
USS *Boone* (FFG 28)**
USS *Stephen W. Groves* (FFG 29)**
USS *John L. Hall* (FFG 32)
USS *Jarrett* (FFG 33)
USS *Underwood* (FFG 36)
USS *Crommelin* (FFG 37)**
USS *Curtis* (FFG 38)**
USS *Doyle* (FFG 39)**
USS *Halyburton* (FFG 40)
USS *McClusky* (FFG 41)**
USS *Klakring* (FFG 42)**
USS *Thach* (FFG 43)
USS *DeWert* (FFG 45)
USS *Rentz* (FFG 46)
USS *Nicholas* (FFG 47)
USS *Vandegrift* (FFG 48)
USS *Robert G. Bradley* (FFG 49)
USS *Taylor* (FFG 50)
USS *Gary* (FFG 51)
USS *Carr* (FFG 52)
USS *Hawes* (FFG 53)
USS *Ford* (FFG 54)
USS *Elrod* (FFG 55)
USS *Simpson* (FFG 56)**
USS *Reuben James* (FFG 57)
USS *Samuel B. Roberts* (FFG 58)
USS *Kauffman* (FFG 59)
USS *Rodney M. Davis* (FFG 60)**
USS *Ingraham* (FFG 61)

► USS *Shreveport* (LPD 12)

AMPHIBIOUS TRANSPORT DOCK

The amphibious transports are used to transport and land Marines, their equipment and supplies by embarked air cushion or conventional landing craft or amphibious vehicles, augmented by helicopters or vertical take off and landing aircraft in amphibious assault, special operations, or expeditionary warfare missions.

Austin-class

Power Plant: Two boilers, two steam turbines, two shafts, 24,000 shaft horsepower
Length: 570 feet
Beam: 84 feet
Displacement: Approximately 17,000 tons full load
Speed: 21 knots (24.2 mph)
Aircraft: Up to six CH-46 *Sea Knight* helicopters
Crew: 420 (24 officers, 396 enlisted)
Marine detachment: 900
Armament: Two 25mm MK-38 guns; two *Phalanx* CIWS; and eight .50-calibre machine guns.



Photo by PH3 Teresa J. Ellison

Ships:

- USS *Austin* (LPD 4)
USS *Ogden* (LPD 5)
USS *Duluth* (LPD 6)
USS *Cleveland* (LPD 7)
USS *Dubuque* (LPD 8)
USS *Denver* (LPD 9)
USS *Juneau* (LPD 10)
USS *Shreveport* (LPD 12)
USS *Nashville* (LPD 13)
USS *Trenton* (LPD 14)
USS *Ponce* (LPD 15)

San Antonio-class

Power Plant: four sequentially turbocharged marine Colt-Pielstick diesels, two shafts, 41,600 shaft horsepower
Length: 684 feet
Beam: 105 feet
Displacement: Approximately 24,900 tons full load
Speed: in excess of 22 knots (24.2 mph)
Aircraft: Launch or land two CH-53E *Super Stallion* helicopters or up to four CH-46 *Sea Knight* helicopters, MV-22 *Osprey* tilt rotor aircraft, AH-1 or UI-I-1 helicopters

Armament: Two *Bushmaster* II 30mm Close in Guns, fore and aft; two Rolling Airframe Missile launchers, fore and aft.
Landing Craft/Assault Vehicles: Two LCACs or one LCU; and 14 Advanced Amphibious Assault Vehicles.
Crew: 361 (28 officers, 333 enlisted)
Embarked Landing Force: 699 (66 officers, 633 enlisted); surge capacity to 800

Ships:

- San Antonio* (LPD 17)*
New Orleans (LPD 18)*
Mesa Verde (LPD 19)*
Green Bay (LPD 20)*
New York (LPD 21)*
San Diego (LPD 22)*
Anchorage (LPD 23)*
Arlington (LPD 24)*
Somerset (LPD 25)*

* Under Construction
** Naval Reserve Force

Ships

AMPHIBIOUS DOCK LANDING

Dock Landing Ships support amphibious operations including landings via Landing Craft Air Cushion (LCAC), conventional landing craft and helicopters, onto hostile shores.

Whidbey Island-class

Power Plant: Four Colt Industries, 16 Cylinder diesels, two shafts, 33,000 shaft horsepower
Length: 609 feet
Beam: 84 feet
Displacement: 15,939 tons full load
Speed: 20+ knots (23.5+ miles per hour)
Landing Craft: Four Landing Craft, Air Cushion
Crew: 413 (22 officers, 391 enlisted)
Marine detachment: 402 plus 102 surge
Armament: Two 25mm MK 38 Machine Guns; two 20mm *Phalanx* CIWS mounts and six .50 cal. machine guns

Ships:

USS *Whidbey Island* (LSD 41)
USS *Germantown* (LSD 42)
USS *Fort McHenry* (LSD 43)
USS *Gunston Hall* (LSD 44)
USS *Comstock* (LSD 45)
USS *Tortuga* (LSD 46)
USS *Rushmore* (LSD 47)
USS *Ashland* (LSD 48)



Photo by PH3 Angel Roman-Otero

Harpers Ferry-class

Power Plant: Four Colt Industries, 16 Cylinder Diesels, two shafts, 33,000 shaft horsepower
Length: 609 feet
Beam: 84 feet
Displacement: 16,708 tons full load
Speed: 20+ knots (23.5+ miles per hour)
Landing Craft: Two Landing Craft, Air Cushion
Crew: 419 (22 officers, 397 enlisted)
Marine detachment: 402 plus 102 surge
Armament: Two 25mm MK 38 Machine Guns, two 20mm *Phalanx* CIWS mounts and six .50 cal. machine guns

Ships:

USS *Harpers Ferry* (LSD 49)
USS *Carter Hall* (LSD 50)
USS *Oak Hill* (LSD 51)
USS *Pearl Harbor* (LSD 52)

▲ USS Comstock (LSD 45)

AMPHIBIOUS COMMAND

Amphibious Command ships provide command and control for fleet commanders. Commissioned in 1970, these are the only ships to be designed initially for an amphibious command ship role. Earlier amphibious command ships lacked sufficient speed to keep up with a 20-knot amphibious force. Subsequently, both ships became fleet flagships. USS *Blue Ridge* became the 7th Fleet command ship in 1979, and USS *Mount Whitney* became the 2nd Fleet command ship in 1981. USS *La Salle* (AGF 3) is the flagship for Commander, 6th Fleet and USS *Coronado* (AGF 11) is the flagship for Commander, 3rd Fleet.

Blue Ridge-class

Power Plant: Two boilers, one geared turbine, one shaft; 22,000 horsepower
Length overall: 634 feet
Beam extreme: 108 feet
Displacement: 18,874 tons full load
Speed: 23 knots (26.5 mph)
Aircraft: All helicopters except the CH-53 *Sea Stallion* can be carried
Crew: 842 (52 officers, 790 enlisted)

Ships:

USS *Blue Ridge* (LCC 19)
USS *Mount Whitney* (LCC 20)

La Salle & Coronado-classes

Power Plant: Two boilers, geared turbines, two shafts, 24,000 shaft horsepower
Length: *La Salle*—520 feet; *Coronado*—570 feet
Beam: *La Salle*—84 feet; *Coronado*—100 feet
Displacement: *La Salle*—14,650 tons; *Coronado*—16,912 tons
Speed: *La Salle*—20 knots; *Coronado*—21 knots
Aircraft: *La Salle*—one light helicopter; *Coronado*—two light helicopters
Crew: *La Salle*—440 ships company + 59 flag staff; *Coronado*—516 ships company + 120 flag staff
Armament: *La Salle*—two *Phalanx* CWIS, four machine gun mounts, two saluting guns; *Coronado* two *Phalanx* CWIS, two 12.7mm MGs

Ships:

USS *La Salle* (AGF 3)
USS *Coronado* (AGF 11)

▼ USS Defender (MCM 2)



Photo by PH1 David A. Levy

MINE WARFARE

Avenger-class ships are designed as mine hunter-killers capable of finding, classifying and destroying moored and bottom mines. The last three MCM ships were purchased in 1990, bringing the total to 14 fully-deployable, oceangoing *Avenger*-class ships. These ships use sonar and video systems, cable cutters and a mine detonating device that can be released and detonated by remote control. They are also capable of conventional sweeping measures. *Osprey*-class (MHC 51) are also designed as mine hunter-killers. MHC 51 has a 15-day endurance and depends on a support ship or shore-based facilities for re-supply.

Avenger-class

Power Plant: Four diesels (600 horsepower each), two shafts with controllable pitch propellers
Length: 224 feet
Beam: 39 feet
Displacement: 1,312 tons full load
Speed: 14 knots (16.1 mph)
Crew: 84 (8 officers, 76 enlisted)
Armament: Mine neutralization system. Two .50 caliber machine guns

Ships:

USS *Avenger* (MCM 1)**
USS *Defender* (MCM 2)**
USS *Sentry* (MCM 3)**
USS *Champion* (MCM 4)**
USS *Guardian* (MCM 5)
USS *Devastator* (MCM 6)
USS *Patriot* (MCM 7)
USS *Scout* (MCM 8)
USS *Pioneer* (MCM 9)
USS *Warrior* (MCM 10)
USS *Gladiator* (MCM 11)**
USS *Ardent* (MCM 12)
USS *Dextrous* (MCM 13)
USS *Chief* (MCM 14)

** Naval Reserve Force

OWNER'S & OPERATOR'S MANUAL

Ships

Osprey-class

Power Plant: Two diesels (800 hp each); two VoithSchneider (cycloidal) propulsion systems
Length: 188 feet
Beam: 36 feet
Displacement: 893 tons (907.33 full load)
Speed: 10 knots
Crew: 51 (5 officers, 46 enlisted)
Armament: Two .50 caliber machine guns, Nine Neutralization System and other mine countermeasures systems

Ships:

USS *Osprey* (MHC 51)**
USS *Heron* (MHC 52)**
USS *Pelican* (MHC 53)**
USS *Robin* (MHC 54)**
USS *Oriole* (MHC 55)**
USS *Kingfisher* (MHC 56)**
USS *Cormorant* (MHC 57)**
USS *Black Hawk* (MHC 58)**
USS *Falcon* (MHC 59)**
USS *Cardinal* (MHC 60)
USS *Raven* (MHC 61)
USS *Shrike* (MHC 62)**

AUXILIARY SHIPS

The fast combat support ship (AOE) is the Navy's largest combat logistics ship. The AOE has the speed and armament to keep up with the carrier strike groups. It rapidly replenishes Navy task forces and can carry more than 177,000 barrels of oil; 2,150 tons of ammunition; 500 tons of dry stores; and 250 tons of refrigerated stores. It receives petroleum products, ammunition and stores from shuttle ships and redistributes these items simultaneously to carrier strike group ships. This reduces the vulnerability of serviced ships by reducing alongside time.

Sacramento-class (Fast Combat Support Ship)

Power Plant: Four boilers, geared turbines, two shafts, 100,000 shaft horsepower
Length: 793 feet
Beam: 107 feet
Displacement: 53,000 tons full load
Speed: 26 knots (30 mph)
Aircraft: Two CH-46E *Sea Knight* helicopters
Crew: 600 (24 officers, 576 enlisted)
Armament: NATO *Sea Sparrow* missiles, two *Phalanx* CIWS.

Ships:

USS *Camden* (AOE 2)
USS *Seattle* (AOE 3)
USS *Detroit* (AOE 4)



▲ USS *La Salle* (AGF 3), the Dutch frigate HNLMS *Jacob Van Heemskerck* (F 812) and USS *Emory S. Land* (AS 39)

RESCUE & SALVAGE

Rescue and salvage ships render assistance to disabled ships, provide towing, salvage, diving, firefighting and heavy lift capabilities. For rescue missions, these ships are equipped with fire monitors forward and amidships which can deliver either firefighting foam or sea water. The salvage holds of these ships are outfitted with portable equipment to provide assistance to other vessels in dewatering, patching, supply of electrical power and other essential service required to return a disabled ship to an operating condition.

Power Plant: Four Caterpillar 399 Diesels, two shafts, 4,200 horsepower
Length: 255 feet
Beam: 51 feet
Draft: 16 feet 9 inches
Displacement: 3,282 tons full load
Speed: 14 knots (16.1 mph)
Endurance: 8,000 miles at 8 knots (9.2 mph).
Salvage capability: 7.5-ton capacity boom forward; 40-ton capacity boom aft
Heavy lift: Capable of a hauling force of 150 tons
Diving Depth: 190 feet (57.9 meters), using air
Crew: 100 (6 officers, 94 enlisted)
Armament: Two .50 caliber machine guns; two MK-38 25mm guns

Safeguard-class (Salvage Ships)

USS *Safeguard* (ARS 50)
USS *Grasp* (ARS 51)
USS *Salvor* (ARS 52)
USS *Grapple* (ARS 53)

SUBMARINE TENDERS

Submarine tenders furnish maintenance and logistic support for nuclear attack submarines and are the largest of the active auxiliaries. Their crews are made up mostly of technicians and repair personnel.

Emory S. Land-class

Power Plant: Two boilers, geared turbines, one shaft, 20,000 shaft horsepower
Length: 644 feet
Beam: 85 feet
Displacement: Approximately 23,493 tons full load
Speed: 20 knots (23 mph)
Aircraft: None
Crew: 1,363 (97 officers, 1,266 enlisted)
Armament: Two 40mm guns, and four 20mm guns

Ships:
USS *Emory S. Land* (AS 39)
USS *Frank Cable* (AS 40)

Other Ships in Commission

Constitution
USS *Pueblo* (AGER 2)
Self Defense Test Ship (EDDG 31)

* *Under Construction*
** *Naval Reserve Force, Active*

(Source: Navy Fact File)



Photo by PHAN Konstantinos Goumenidis

► USS *Camden* (AOE 2)

MSC Ships

NAVAL FLEET AUXILIARY FORCE (NFAF)

Ammunition Ships (T-AE)

- USNS *Kilauea* (T-AE 26)
- USNS *Santa Barbara* (T-AE 28)
- USNS *Flint* (T-AE 32)
- USNS *Shasta* (T-AE 33)
- USNS *Mount Baker* (T-AE 34)
- USNS *Kiska* (T-AE 35)

Combat Stores Ships (T-AFS)

- USNS *Niagara Falls* (T-AFS 3)
- USNS *Concord* (T-AFS 5)
- USNS *San Jose* (T-AFS 7)
- USNS *Sirius* (T-AFS 8)
- USNS *Spica* (T-AFS 9)
- USNS *Saturn* (T-AFS 10)

Fast Combat Support Ships (T-AOE)

- USNS *Supply* (T-AOE 6)
- USNS *Rainer* (T-AOE 7)
- USNS *Arctic* (T-AOE 8)
- USNS *Bridge* (T-AOE 10)

Hospital Ships (T-AH)

- USNS *Mercy* (T-AH 19)
- USNS *Comfort* (T-AH 20)

Advanced Auxiliary Dry Cargo Ships (T-AKE)

- Lewis and Clark* (T-AKE 1)
- Sacagawea* (T-AKE 2)

Underway Replenishment Oilers (T-AO)

- USNS *Henry J. Kaiser* (T-AO 187)
- USNS *John Lenthall* (T-AO 189)
- USNS *Walter S. Diehl* (T-AO 193)
- USNS *John Ericsson* (T-AO 194)
- USNS *Leroy Grumman* (T-AO 195)
- USNS *Kanawha* (T-AO 196)
- USNS *Pecos* (T-AO 197)
- USNS *Big Horn* (T-AO 198)
- USNS *Tippecanoe* (T-AO 199)
- USNS *Guadalupe* (T-AO 200)
- USNS *Patuxent* (T-AO 201)
- USNS *Yukon* (T-AO 202)



Photo by PHAN Jason D. London

▲ USNS *Shasta* (T-AE 33)

Fleet Ocean Tugs (T-ATF)

- USNS *Catawba* (T-ATF 168)
- USNS *Navajo* (T-ATF 169)
- USNS *Mohawk* (T-ATF 170)
- USNS *Sioux* (T-ATF 171)
- USNS *Apache* (T-ATF 172)

SPECIAL MISSION SHIPS

Acoustic Survey Ship (T-AG)

- USNS *Hayes* (T-AG 195)

Cable Laying/Repair Ship (T-ARC)

- USNS *Zeus* (T-ARC 7)

Command Ship (T-AGF)

- USS *Coronado* (T-AGF 11)
- USS *Mount Whitney* (LCC 20)

Missile Range Instrumentation/Navigation Test Support Ships (T-AGM)

- USNS *Observation Island* (T-AGM 23)
- USNS *Invincible* (T-AGM 24)
- USNS *Waters* (T-AGS 45)

Ocean Surveillance Ships (T-AGOS)

- USNS *Victorious* (T-AGOS 19)
- USNS *Effective* (T-AGOS 21)
- USNS *Loyal* (T-AGOS 22)
- USNS *Impeccable* (T-AGOS 23)

Oceanographic Survey Ships (T-AGS)

- USNS *John McDonnell* (T-AGS 51)
- USNS *Pathfinder* (T-AGS 60)
- USNS *Sumner* (T-AGS 61)
- USNS *Bowditch* (T-AGS 62)
- USNS *Henson* (T-AGS 63)
- USNS *Bruce C. Heezen* (T-AGS 64)
- USNS *Mary Sears* (T-AGS 65)

Special Mission Charter Ships

- SSV *C-Commando**
- MV *Cory Chouest**
- MV *Dolores Chouest**
- MV *Kellie Chouest**
- MV *CaroLyn Chouest**

High Speed Vessels (HSV)

- MV *Swift* (HSV 2)*

* Denotes Charter Ship

** Denotes Ready Reserve Force Ship

Source: Military Sealift Command

PREPOSITIONING PROGRAM/MARITIME PREPOSITIONING PROGRAM

Container Ships (T-AK)

- MV *Capt. Steven L. Bennett* (T-AK 4296)*
- MV *Maj. Bernard F. Fisher* (T-AK 4396)*
- MV *A1C William A. Pitsenbarger* (T-AK 4638)*
- MV *Merlin* (T-AK 323)*
- MV *LTC John U.D. Page* (T-AK 4496)*
- MV *SSG Edward A. Carter, Jr.* (T-AK 4544)*

Maritime Prepositioning Ships (T-AK)

- MV *Cpl. Louis J. Hauge, Jr.* (T-AK 3000)*
- MV *PFC William B. Baugh* (T-AK 3001)*
- MV *PFC James Anderson, Jr.* (T-AK 3002)*
- MV *1st Lt. Alex Bonnyman* (T-AK 3003)*
- MV *Pvt. Franklin J. Phillips* (T-AK 3004)*
- MV *Sgt. Matej Kocak* (T-AK 3005)*
- MV *PFC Eugene A. Obregon* (T-AK 3006)*
- MV *Maj. Stephen W. Pless* (T-AK 3007)*
- MV *2nd Lt. John P. Bobo* (T-AK 3008)*
- MV *PFC Dewayne T. Williams* (T-AK 3009)*



Photo by P11 Michelle R. Hammond

▲ High Speed Vessel *Swift* (HSV 2) and USS *Avenger* (MCM 1).

- MV *1st Lt. Baldomero Lopez* (T-AK 3010)*
- MV *1st Lt. Jack Lummus* (T-AK 3011)*
- MV *Sgt. William R. Button* (T-AK 3012)*
- USNS *1st Lt. Harry L. Martin* (T-AK 3015)*
- USNS *Lance Cpl. Roy N. Wheat* (T-AK 3016)*
- USNS *Gunnery Sgt. Fred W. Stockham* (T-AK 3017)*

Transport Tankers (T-AOT)

- SS *Chesapeake* (T-AOT 5084)**
- SS *Petersburg* (T-AOT 9101)**

Aviation Logistics Ships (T-AVB)

- SS *Wright* (T-AVB 3)**
- SS *Curtiss* (T-AVB 4)**

Break Bulk Ship (T-AK)

- SS *Cape Jacob* (T-AK 5029)**

Large, Medium-speed Roll-on/Roll-off Ships T-AKR

- USNS *Watson* (T-AKR 310)
- USNS *Sisler* (T-AKR 311)
- USNS *Dahl* (T-AKR 312)
- USNS *Red Cloud* (T-AKR 313)
- USNS *Charlton* (T-AKR 314)
- USNS *Watkins* (T-AKR 15)
- USNS *Pomeroy* (T-AKR 316)
- USNS *Soderman* (T-AKR 317)

High Speed Vessels (HSV)

- MV *Westpac Express**

SEALIFT FORCE

Fast Sealift Ships (T-AKR)

- USNS *Algol* (T-AKR 287)
- USNS *Bellatrix* (T-AKR 288)
- USNS *Denebola* (T-AKR 289)
- USNS *Pollux* (T-AKR 290)
- USNS *Altair* (T-AKR 291)
- USNS *Regulus* (T-AKR 292)
- USNS *Capella* (T-AKR 293)
- USNS *Antares* (T-AKR 294)

Large, Medium-speed Roll-on/Roll-off Ships (T-AKR)

- USNS *Gordon* (T-AKR 296)
- USNS *Gilliland* (T-AKR 298)
- USNS *Shughart* (T-AKR 295)
- USNS *Yano* (T-AKR 297)
- USNS *Bob Hope* (T-AKR 300)
- USNS *Fisher* (T-AKR 301)
- USNS *Seay* (T-AKR 302)
- USNS *Mendonca* (T-AKR 303)
- USNS *Pililaau* (T-AKR 304)
- USNS *Brittin* (T-AKR 305)
- USNS *Benavidez* (T-AKR 306)

Transport Tankers (T-AOT)

- MV *Gus W. Darnell* (T-AOT 1121)*
- USNS *Paul Buck* (T-AOT 1122)
- USNS *Samuel L. Cobb* (T-AOT 1123)
- USNS *Richard G. Matthiesen* (T-AOT 1124)
- USNS *Lawrence H. Gianella* (T-AOT 1125)
- MV *Montauk**

Container Ships

- MV *Sagamore**

Ice-strengthened Container Ships

- MV *American Tern**

Down-range Support Ship

- MV *Sea Mark III**

OWNER'S & OPERATOR'S MANUAL



Photo by PH2 Eric S. Logsdon

▲ Members of Special Boat Team (SBT) 22 practice narrow river beach extractions under hostile fire conditions. SBT-22's primary mission is to conduct special operations in riverine environments. Special Warfare Combatant-craft Crewmen (SWCC) operate and maintain state-of-the-art, high-performance boats and ships used to support Navy SEALs (Sea, Air & Land) and special operations missions.

COMMANDER NAVAL SPECIAL WARFARE COMMAND, CORONADO, CALIF.

Commander, Naval Special Warfare Group (NSWG) 1, Coronado

Seal Teams 1/3/5/7
Logistics Support Unit 1, Coronado
Naval Special Warfare Unit (NSWU) 1,
Guam
NSWU 3, Bahrain

Commander, NSWG 3, Coronado

SEAL Delivery Vehicle Team (SDVT) 1,
Hawaii
SDVT 1, Advanced SEAL Delivery
System (ASDS), Hawaii
SDVT 2, Coronado

NAVAL SPECIAL WARFARE CENTER, CORONADO

Commander Naval Special Warfare Operations Support Group (OSG), Coronado

Operations Support Team (OST) 1,
Coronado
OST 2, Little Creek, Va.

Navy Parachute Team "Leap Frogs"

Commander, NSWG 2, Little Creek, Va.

Seal Teams 2/4/8/10
Logistics Support Unit 2, Coronado
NSWU 2, Germany
NSWU 10, Spain

Commander, NSWG 4, Little Creek, Va.

SBT 20, Little Creek, Va.
SBT 22, Stennis, Miss.

NAVAL SPECIAL WARFARE COMMAND (RESERVE FORCE)

San Diego

Battle Staff Support Unit–West Det. A
Battle Staff Support Unit–West Det. B
Civil Engineer Support Equipment
(CESE) Operations and Maintenance
–West
Coastal Craft (CC) Operations and
Training Support–West
CC Maintenance Support Unit–West
Combat Service Support Det. (CSSD)
–West Det. A
Naval Special Warfare Intelligence
Support Unit–West
Warfare Command Staff Augmentation
Unit
NSWG 1 Staff Augmentation Unit
NSWG 3 Staff Augmentation Unit
Communication Support Unit–West
Military Sealift Command (MSC)
Support Unit

Training Detachment (TRADET)
Support Unit–Assault West
TRADET Support Unit–Air Ops West
TRADET Support Unit–Marine Ops West
TRADET Support Unit–Land Warfare

West
TRADET Support Unit–Sniper West
TRADET Support Unit–TGM West
TRADET Support Unit–Staff West
OST 1 Admin Support Unit
Logistics Support Medical Support
–West
Logistics Support Technical Support
–West
Nuclear, Chemical, Biological,
Radiological (NCBR)–Defense
NSW Voluntary Training Unit

Little Creek, Va.

Battle Staff Support Unit–East Det. B
CESE Operations and Maintenance
–East
Coastal CC Operations and Training
Support–East
Coastal CC Maintenance Support
Unit–East
CSSD–East Det. A
CSSD–East Det. B (AT/FP)
Naval Special Warfare Intelligence
Support Unit–East
NSWG 2 Staff Augmentation Unit
NSWG 4 Staff Augmentation Unit
Communication Support Unit
–East
TRADET Support Unit–Assault East
TRADET Support Unit–Air Ops East
TRADET Support Unit–Marine Ops
East
TRADET Support Unit–Land Warfare
East
TRADET Support Unit–SniperEast
TRADET Support Unit–TGM East
TRADET Support Unit–Staff East
OST 2 Admin Support Unit
Logistics Support Medical Support
–East

Logistics Support Technical
Support–East
Naval Special Warfare
Voluntary Training Unit

Port Hueneme, Calif.

CSSD West Det.B

Fresno, Calif.

Det. Lemoore

Sacramento, Calif.

Riverine Training &
Operations–West

Honolulu

SDV Training &
Operations–West
SDV Maintenance–West

Naval Special Warfare Dets.

Bangor, Wash.
Denver
Springfield, Mo.
Great Lakes, Ill.
Columbus, Ohio
Providence, R.I.
Colt's Neck, N.J.
Washington, D.C.
Tampa, Fla.
Atlanta
Austin, Texas

Stennis, Miss.

Riverine Training & Operations East
Riverine Maintenance East

(Source: Naval Special Warfare Command,
Jan 1, 2005)

Photo by PH1 Shawn Eklund



▲ U.S. Navy SEALs (Sea, Air, Land) receive tactical mobility training from Naval Special Warfare Group (NSWG) 2 Training Detachment (TRADET). NSWG-2 TRADET trains all of the east coast SEAL Teams before they deploy to support missions throughout the world.


Pay Chart

Proposed Monthly Basic Pay Table
(effective Jan. 1, 2005)

		Years of Service													
Pay Grade	<2	2	3	4	6	8	10	12	14	16	18	20	22	24	26
Enlisted Members*															
E-9	0	0	0	0	0	0	3901.12	3989.61	4101.08	4232.43	4364.08	4575.84	4755.00	4943.78	5231.61
E-8	0	0	0	0	0	3193.49	3334.77	3422.02	3526.97	3640.61	3845.54	3949.25	4125.92	4224.04	4465.30
E-7	2220.08	2423.14	2515.67	2638.94	2734.57	2899.45	2992.29	3084.51	3249.69	3332.29	3410.84	3458.66	3620.43	3725.07	3989.93
E-6	1920.44	2112.64	2205.79	2296.46	2390.85	2604.16	2687.07	2779.29	2860.02	2888.58	2908.14	2908.14	2908.14	2908.14	2908.14
E-5	1759.60	1876.97	1967.64	2060.79	2205.17	2329.68	2421.59	2450.78	2450.78	2450.78	2450.78	2450.78	2450.78	2450.78	2450.78
E-4	1612.74	1695.64	1787.24	1877.59	1957.70	1957.70	1957.70	1957.70	1957.70	1957.70	1957.70	1957.70	1957.70	1957.70	1957.70
E-3	1456.25	1547.84	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99	1640.99
E-2	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52	1384.52
E-1	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17	1235.17
E-1 < 4 Months	1142.64														
Warrant Officers															
W-5	0	0	0	0	0	0	0	0	0	0	0	5548.32	5738.35	5929.31	6121.20
W-4	3228.58	3473.25	3573.23	3671.35	3840.26	4007.00	4176.23	4341.10	4511.57	4778.92	4949.99	5147.35	5290.92	5461.70	5636.51
W-3	2948.51	3071.78	3197.53	3238.83	3371.10	3522.31	3721.65	3918.82	4128.41	4285.52	4442.01	4509.39	4578.94	4730.16	4881.37
W-2	2593.61	2741.72	2871.49	2965.59	3046.32	3268.32	3437.86	3563.92	3686.88	3771.33	3842.44	3977.51	4111.64	4247.33	4427.33
W-1	2290.25	2477.79	2603.23	2684.27	2900.38	3030.79	3146.30	3275.46	3360.85	3438.47	3564.24	3659.55	3659.55	3659.55	3659.55
Commissioned Officers															
O-10	0	0	0	0	0	0	0	0	0	0	0	12963.06	13026.72	130297.47	13769.43
O-9	0	0	0	0	0	0	0	0	0	0	0	11337.91	11501.23	11737.21	12149.24
O-8	8022.39	8285.07	8459.26	8508.32	8725.36	9089.27	9173.72	9519.00	9618.05	9915.20	10345.55	10742.37	11007.54	11007.54	11007.54
O-7	6666.12	6975.69	7119.14	7233.10	7438.96	7642.65	7878.32	8113.37	8349.03	9089.27	9714.61	9714.61	9714.61	9714.61	9763.67
O-6	4940.68	5427.85	5763.99	5783.99	5806.04	6054.75	6087.97	6087.97	6433.87	7045.56	7404.49	7763.43	7967.74	8174.22	8575.39
O-5	4118.78	4639.80	4961.17	5021.41	5221.37	5341.84	5605.46	5798.90	6048.54	6431.08	6613.34	6793.12	6997.43	6997.43	6997.43
O-4	3553.67	4113.81	4388.30	4449.47	4704.39	4977.63	5317.62	5582.79	5766.61	5872.18	5933.66	5933.66	5933.66	5933.66	5933.66
O-3	3124.56	3542.18	3823.19	4168.15	4367.80	4586.71	4728.60	4962.10	5083.20	5083.20	5083.20	5083.20	5083.20	5083.20	5083.20
O-2	2699.49	3074.57	3541.25	3660.80	3736.25	3736.25	3736.25	3736.25	3736.25	3736.25	3736.25	3736.25	3736.25	3736.25	3736.25
O-1	2343.65	2438.98	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20	2948.20
Commissioned Officers															
(With more than 4 years of active service as an Enlisted Member or Warrant Officer)															
O-3E	0	0	0	4168.15	4367.80	4586.71	4728.60	4962.10	5158.65	5271.05	5424.75	5424.75	5424.75	5424.75	5424.75
O-2E	0	0	0	3660.80	3736.25	3855.17	4055.75	4211.00	4326.51	4326.51	4326.51	4326.51	4326.51	4326.51	4326.51
O-1E	0	0	0	2948.20	3148.78	3264.91	3383.83	3500.58	3660.80	3660.80	3660.80	3660.80	3660.80	3660.80	3660.80

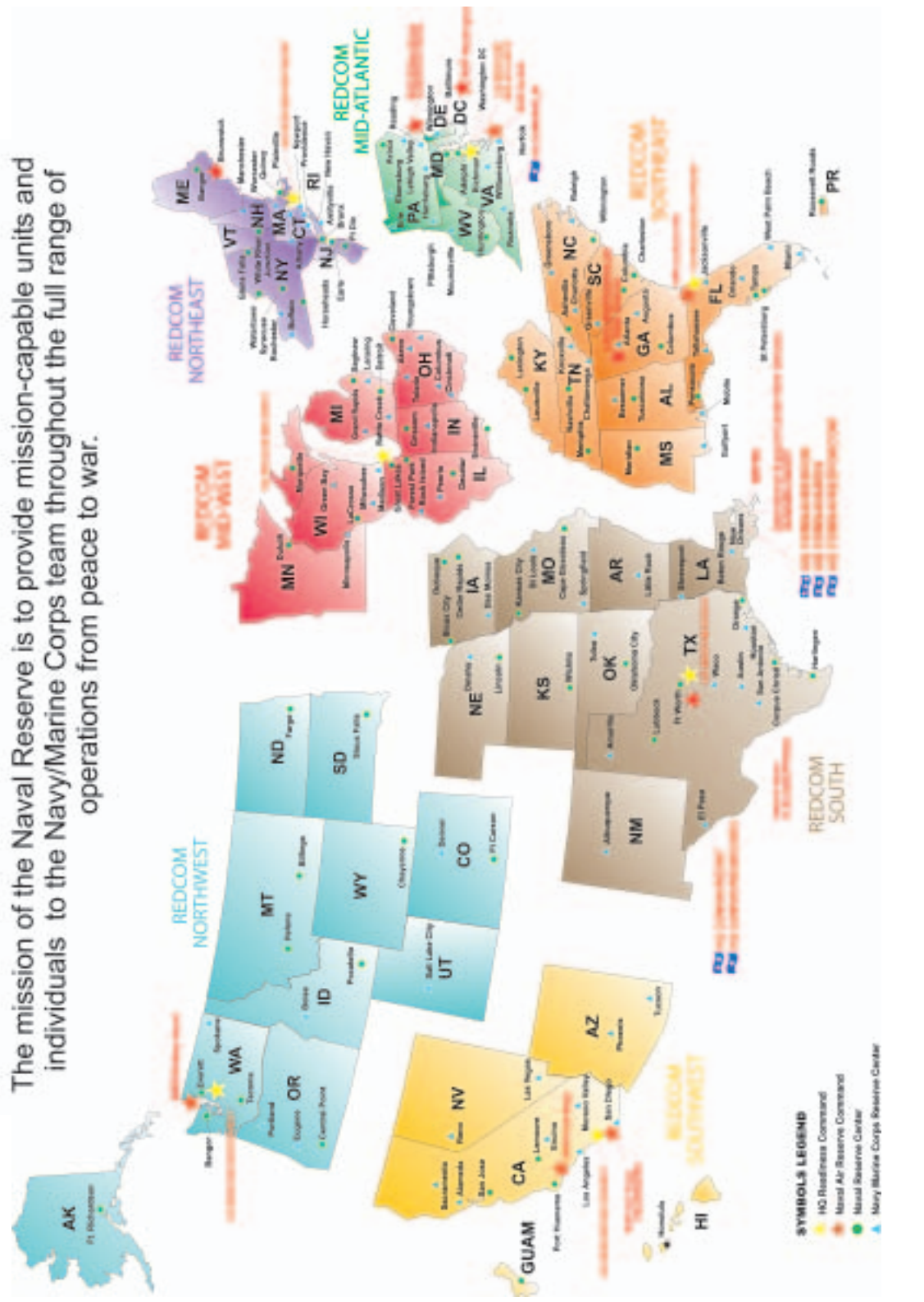
(source: Defense Authorization Act FY 2005)

Reserve Map



THE NAVAL RESERVE FORCE
























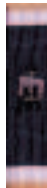








































The mission of the Naval Reserve is to provide mission-capable units and individuals to the Navy/Marine Corps team throughout the full range of operations from peace to war.



OWNER'S & OPERATOR'S MANUAL

Order of Precedence

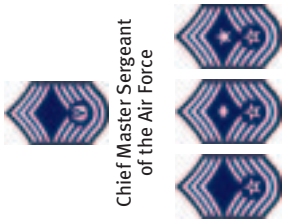































The following display represents the correct order of precedence for medals and/or ribbons most likely to be worn today on the Navy uniform. Additional information on the proper display, placement or additional devices is found in SECNAVINST 1650.1G and the U.S. Navy Uniform Regulations (NAVPERS 15565).
















						
						
						
						
						
						
						
						
						
						

Source: www.bupers.navy.mil

Devices

					
GOLD STAR Denotes subsequent awards of the same Navy decoration	SILVER STAR Worn in lieu of five gold stars	BRONZE STAR Represents participation in campaigns or operations, multiple qualification or an additional award to any of the various ribbons on which it is authorized. Also worn to denote first award of the single-mission Air Medal after Nov. 22, 1989.	SILVER SERVICE STAR Worn in lieu of five bronze stars	BRONZE OAK LEAF CLUSTER Represents second and subsequent entitlements of awards	SILVER OAK LEAF CLUSTER Worn for the 6th, 11th, or in lieu of five bronze oak leaf clusters
					
WINTERED OVER For wintering over on Antarctic continent – a clasp for Antarctic Service Medal; a suspension ribbon and a disc for the service ribbon; bronze for the first winter; gold for the second winter; and silver for the third	"V" DEVICE Authorized for acts or service involving direct participation in combat operations	"HOURGLASS" DEVICE Issued for each succeeding award of the Armed Forces Reserve Medal	EUROPE AND ASIA CLASPS Worn on the suspension ribbon of the Navy Occupation Service Medal	FLEET MARINE FORCE COMBAT OPERATIONS INSIGNIA For Navy personnel attached to Fleet Marine Force units participating in combat operations	SILVER "E" MARKSMAN Denotes Expert Marksman qualification
					
BRONZE "S" Denotes Sharpshooter Marksman qualification	"M" DEVICE Denotes Naval Reserve mobilization in support of certain operations	STRIKE/FLIGHT DEVICE Bronze Arabic numeral denotes the total number of strike/flight awards of the Air Medal earned subsequent to April 9, 1962	"3/16" PALM Worn on the Republic of Vietnam Gallantry Cross Unit Citation and Republic of Vietnam Civil Actions Unit Citation ribbons	"E" DEVICE Denotes four or more Battle "E" Awards	KUWAIT LIBERATION CLUSTER
					
REPUBLIC OF VIETNAM CAMPAIGN CLASP					

Air Force		Army		Marine Corps		Navy & Coast Guard	
E-9							
	Chief Master Sergeant, First Sergeant, Command Chief Master Sergeant	Sergeant Major, Command Sergeant Major		Sergeant Major, Master Gunnery Sergeant		Master Chief Petty Officer, Fleet/Force/Command Master Chief Petty Officer	
E-8							
	Senior Master Sergeant, First Sergeant	Master Sergeant, First Sergeant		First Sergeant, Master Sergeant		Senior Chief Petty Officer	
E-7							
	Master Sergeant, First Sergeant	Sergeant First Class		Gunnery Sergeant		Chief Petty Officer	
E-6							
	Technical Sergeant	Staff Sergeant		Staff Sergeant		Petty Officer First Class	
E-5							
	Staff Sergeant	Sergeant		Sergeant		Petty Officer Second Class	
E-4							
	Senior Airman	Corporal, Specialist		Corporal		Petty Officer Third Class	
E-3							
	Airman First Class	Private First Class		Lance Corporal		Seaman	
E-2							
	Airman	Private		Private First Class		Seaman Apprentice	
E-1	Airman Basic	Private		Private		Seaman Recruit	
Air Force		Army		Marine Corps		Navy & Coast Guard	























Warrant Officers						
No Warrant		Warrant Officer 1		Warrant Officer 1		Warrant Officer 1 (Coast Guard only)
No Warrant		Chief Warrant Officer 2		Chief Warrant Officer 2		Chief Warrant Officer 2
No Warrant		Chief Warrant Officer 3		Chief Warrant Officer 3		Chief Warrant Officer 3
No Warrant		Chief Warrant Officer 4		Chief Warrant Officer 4		Chief Warrant Officer 4
No Warrant		Chief Warrant Officer 5		Chief Warrant Officer 5		Chief Warrant Officer 5

Officers

Devices shown are the same for all services.

Air Force • Army • Marines
Officer Ranks

Navy • Coast Guard
Officer Ranks

O-10		General of the Air Force / Army (Reserved for Wartime)		Fleet Admiral (Reserved for Wartime)
		General		Admiral / Commandant of the Coast Guard
O-9		Lieutenant General		Vice Admiral
O-8		Major General		Rear Admiral (Upper Half)
O-7		Brigadier General		Rear Admiral (Lower Half)
O-6		Colonel		Captain
O-5		Lieutenant Colonel		Commander
O-4		Major		Lieutenant Commander
O-3		Captain		Lieutenant
O-2		First Lieutenant		Lieutenant Junior Grade
O-1		Second Lieutenant		Ensign

Submarines

ATTACK SUBMARINES

Attack submarines are designed to seek and destroy enemy submarines and surface ships. A number of Third World countries are acquiring modern state-of-the-art, non-nuclear submarines. Countering this threat is the primary mission of U.S. nuclear attack submarines. Other missions range from intelligence collection and special forces delivery to anti-ship and strike warfare. (The new *Seawolf*-class submarine is designed to be exceptionally quiet, fast and well-armed with advanced sensors.) It is a multi-mission vessel, capable of deploying to forward ocean areas to search out and destroy enemy submarines and surface ships and to fire missiles in support of other forces.

The *Virginia*-class is the first U.S. submarine to be designed for battle-space dominance across a broad spectrum of regional and littoral missions as well as open-ocean, blue-water missions. It fully embraces the new strategic concept in *From the Sea and Forward... From the Sea*, and achieves the right balance of core military capabilities and affordability.

Los Angeles-class

- Power Plant:** One nuclear reactor, one shaft
- Length:** 360 feet
- Beam:** 33 feet
- Displacement:** Approx. 6,900 tons submerged
- Speed:** 20+ knots (23+ mph)
- Crew:** 144 (13 officers, 121 enlisted)
- Armament:** *Tomahawk* missiles, VLS tubes (SSN 719 and later), MK-48 torpedoes, four torpedo tubes
- Ships:**
 - USS *Los Angeles* (SSN 688)
 - USS *Philadelphia* (SSN 690)
 - USS *Memphis* (SSN 691)
 - USS *Bremerton* (SSN 698)
 - USS *Jacksonville* (SSN 699)
 - USS *Dallas* (SSN 700)

- USS *La Jolla* (SSN 701)
- USS *City of Corpus Christi* (SSN 705)
- USS *Albuquerque* (SSN 706)
- USS *Portsmouth* (SSN 707)
- USS *Minneapolis-St. Paul* (SSN 708)
- USS *Hyman G. Rickover* (SSN 709)
- USS *Augusta* (SSN 710)
- USS *San Francisco* (SSN 711)
- USS *Houston* (SSN 713)
- USS *Norfolk* (SSN 714)
- USS *Buffalo* (SSN 715)
- USS *Salt Lake City* (SSN 716)
- USS *Olympia* (SSN 717)
- USS *Honolulu* (SSN 718)
- USS *Providence* (SSN 719)
- USS *Pittsburgh* (SSN 720)
- USS *Chicago* (SSN 721)
- USS *Key West* (SSN 722)
- USS *Oklahoma City* (SSN 723)
- USS *Louisville* (SSN 724)
- USS *Helena* (SSN 725)
- USS *Newport News* (SSN 750)
- USS *San Juan* (SSN 751)
- USS *Pasadena* (SSN 752)
- USS *Albany* (SSN 753)
- USS *Topeka* (SSN 754)
- USS *Miami* (SSN 755)
- USS *Scranton* (SSN 756)
- USS *Alexandria* (SSN 757)
- USS *Asheville* (SSN 758)
- USS *Jefferson City* (SSN 759)
- USS *Annapolis* (SSN 760)
- USS *Springfield* (SSN 761)
- USS *Columbus* (SSN 762)
- USS *Santa Fe* (SSN 763)
- USS *Boise* (SSN 764)
- USS *Montpelier* (SSN 765)
- USS *Charlotte* (SSN 766)
- USS *Hampton* (SSN 767)
- USS *Hartford* (SSN 768)
- USS *Toledo* (SSN 769)
- USS *Tucson* (SSN 770)
- USS *Columbia* (SSN 771)
- USS *Greeneville* (SSN 772)
- USS *Cheyenne* (SSN 773)



Photo by PNT Glass David C. Lloyd

▲ USS Toledo (SSN 769)

Seawolf-class

- Power Plant:** One nuclear reactor, one shaft
- Length:** 353 feet
- Draft:** 35 feet
- Beam:** 40 feet
- Displacement:** 8,060 tons surfaced; 9,150 tons submerged
- Speed:** 25+ knots (28+ mph)
- Crew:** 144 (13 officers; 121 enlisted)
- Armament:** *Tomahawk* missiles, MK-48 torpedoes, eight torpedo tubes.

Ships:

- USS *Seawolf* (SSN 21)
- USS *Connecticut* (SSN 22)
- Jimmy Carter* (SSN 23)*

Virginia-class

- Power Plant:** One nuclear reactor, one shaft
- Length:** 377 feet
- Beam:** 34 feet
- Displacement:** Approx. 7,800 tons
- Speed:** 25+ knots (28+ mph)
- Crew:** 134 officers and enlisted
- Armament:** *Tomahawk* missiles, VLS tubes, MK-48 torpedoes, four torpedo tubes, advanced mobile mines, and unmanned undersea vehicles.

Ships:

- USS *Virginia* (SSN 774)
- Texas* (SSN 775)*
- Hawaii* (SSN 776)*
- North Carolina* (SSN 777)*
- New Hampshire* (SSN 778)*

BALLISTIC MISSILE SUBMARINES

Strategic deterrence has been the sole mission of the fleet ballistic missile submarine (SSBN) since its inception in 1960. The SSBN provides the nation’s most survivable and enduring nuclear strike capability. The *Ohio*-class submarine replaced aging fleet ballistic missile submarines built in the 1960s and is far more capable.

Ohio-class/*Trident* ballistic missile submarines provide the sea-based “leg” of the triad of U.S. strategic deterrent forces. The first four *Ohio*-class submarines are scheduled for conversion during the next five years to guided missile submarines (SSGN) with an additional capability to transport and support Navy special operations forces.

Ohio-class

- Power Plant:** One nuclear reactor, one shaft
- Length:** 560 feet
- Beam:** 42 feet
- Displacement:** 16,764 tons surfaced; 18,750 tons submerged
- Speed:** 20+ knots (23+ mph)
- Crew:** 155 (15 officers, 140 enlisted)
- Armament:** 24 tubes for *Trident I* and *II*, MK-48 torpedoes, four torpedo tubes.

Ships:

- USS *Henry M. Jackson* (SSBN 730)
- USS *Alabama* (SSBN 731)
- USS *Alaska* (SSBN 732)
- USS *Nevada* (SSBN 733)
- USS *Tennessee* (SSBN 734)
- USS *Pennsylvania* (SSBN 735)
- USS *West Virginia* (SSBN 736)
- USS *Kentucky* (SSBN 737)
- USS *Maryland* (SSBN 738)
- USS *Nebraska* (SSBN 739)
- USS *Rhode Island* (SSBN 740)
- USS *Maine* (SSBN 741)
- USS *Wyoming* (SSBN 742)
- USS *Louisiana* (SSBN 743)

Ships undergoing conversion to SSGN:

- USS *Ohio* (SSGN 726)
- USS *Michigan* (SSGN 727)
- USS *Florida* (SSGN 728)
- USS *Georgia* (SSGN 729)

DEEP SUBMERGENCE RESCUE VEHICLES

Deep Submergence Rescue Vehicles (DSRV) perform rescue operations on submerged, disabled submarines of the U.S. Navy or foreign navies. DSRVs can embark up to 24 personnel for transfer to another vessel. The DSRV also has an arm to clear hatches on a disabled submarine and a combined gripper and cable cutter. The gripper is able to lift 1,000 pounds.

- Power Plant:** Electric motors, silver/zinc batteries, one shaft, 15 shaft horse-power, four thrusters, 7.5 horsepower.
- Length:** 49 feet
- Beam:** 8 feet
- Displacement:** 38 tons
- Speed:** 4 kph
- Maximum Depth:** 5,000 feet
- Sonar:** Search and navigation
- Crew:** Two pilots, two rescue personnel and the capacity for 24 passengers

Ships:

- DSRV *Mystic*
- DSRV *Avalon*

* Under Construction

U.S. Navy photo.



▲ USS Michigan (SSBN 727)

Submarines



Photo by PH1 Daniel N. Woods

▲ *Mystic* (DSRV 1)

SUBMERSIBLE RESEARCH VEHICLES

NR 1, a nuclear-powered ocean engineering and research submarine, is the first deep submergence vessel using nuclear power. NR 1's missions have included search, object recovery, geological survey, oceanographic research, and installation and maintenance of underwater equipment. NR 1 is generally towed to and from remote mission locations by an accompanying surface tender, which is also capable of conducting research in conjunction with the submarine.

Power Plant: One nuclear reactor, one turbo-alternator; Two motors (external), two propellers, Four ducted thrusters (two horizontal, two vertical)
Length: 150 feet
Displacement: 400 tons
Diameter: 12 feet
Maximum Operating Depth: 2,375 feet

Crew: 7 (2 officer, 3 enlisted, 2 scientists)
Armament: None

Ships:
Submarine NR-1 (Nuclear)

RESEARCH SUBMARINE

USS *Dolphin* (AGSS 555) is the Navy's only operational, diesel-electric, deep-diving, research and development submarine. The submarine has since amassed an impressive record of scientific and military accomplishments, and now serves as a unit of the U.S. Naval Submarine Force, U.S. Pacific Fleet, under Commander, Submarine Development Squadron 5

Features: Because she was designed as a test platform, USS *Dolphin* can be modified both internally and externally to allow installation of up to 12 tons of special research and test equipment. The submarine has internal and external mounting points, multiple electronic hull connectors, and up to 10 equipment racks for project use.

Power Plant: Diesel/Electric; Two GM 12-cylinder, 425 HP engines
Length: 165 feet
Displacement: 950 tons full load
Diameter: 18 feet
Operating Depth: 3,000 feet
Crew: 51+ (5 officer, 46 enlisted, and up to 5 scientists)
Armament: None

Ship:
USS *Dolphin* (AGSS 555)

LARGE SCALE VEHICLE 2 (LSV 2)

LSV 2 *Cutthroat*, the world's largest unmanned autonomous submarine, will offer the capability to conduct a wide variety of studies dramatically improving the acoustic and operational performance of future submarines. *Cutthroat*, a 205-ton, large scale submarine test vehicle, will be used to affordably explore and test emerging technologies and to conduct physics-based experiments. Specific emphasis will be on stealth, hydrodynamics, hydro-acoustics and propulsion designs to permit technology insertion into current and future submarines.

Propulsion: Electric drive (3,000 shaft horsepower (shp) plant coupled with electric motor controller, expandable to 6,000 shp with additional motor controlled modules)
Length: 111 feet
Diameter: 10 feet
Weight: 205 tons
Armament: None
Crew: None

Ships:
Cutthroat (LSV 2)



Photo by PH2 William H. Ramsey

▲ USS *Kitty Hawk* (CV 63)

The aircraft carrier continues to be the centerpiece of the forces necessary for forward presence. Whenever there has been a crisis, the first question has been: "Where are the carriers?" Carriers support and operate aircraft that engage in attacks on airborne, afloat, and ashore targets that threaten free use of the sea; and engage in sustained operations in support of other forces.

Aircraft carriers are deployed worldwide in support of U.S. interests and commitments. They can respond to global crises in ways ranging from peacetime presence to full-scale war. Together with their on-board air wings, the carriers have vital roles across the full spectrum of conflict.

Nimitz-class

Length, overall: 1,092 feet
Flight Deck Width: 252 feet
Beam: 134 feet
Displacement: Approx. 97,000 tons

Aircraft: 85
Speed: 30+ knots (34.5+ miles per hour)
Crew: 3,200; Air Wing: 2,480
Armament: Two or three (depending on modification) NATO *Sea Sparrow* launchers, 20mm *Phalanx* CIWS mounts: (three on *Nimitz* and *Dwight D. Eisenhower* and four on *Carl Vinson* and later ships of the class.)

Carriers

USS *Nimitz* (CVN 68)
USS *Dwight D. Eisenhower* (CVN 69)
USS *Carl Vinson* (CVN 70)
USS *Theodore Roosevelt* (CVN 71)
USS *Abraham Lincoln* (CVN 72)
USS *George Washington* (CVN 73)
USS *John C. Stennis* (CVN 74)
USS *Harry S. Truman* (CVN 75)
USS *Ronald Reagan* (CVN 76)
George H.W. Bush (CVN 77)*
(keel laid Sep. 6, 2003)

John F. Kennedy-class

Length, overall: 1052 feet
Flight Deck Width: 252 feet
Beam: 130 feet
Displacement: 82,000 tons
Speed: 30+ knots (34.5 mph)
Aircraft: 85
Crew: 3,117; Air Wing: 2,480
Armament: *Sea Sparrow* missiles with box launchers, Three 20mm *Phalanx* CIWS mounts.

Carriers

USS *John F. Kennedy* (CV 67)

* Under Construction
Source: U.S. Navy Fact File

Aircraft Carriers

Enterprise-class

Length, overall: 1,101 feet 2 inches
Flight Deck Width: 252 feet
Beam: 133 feet
Displacement: 89,600 tons
Speed: 30+ knots (34.5 mph)
Aircraft: 85
Crew: 3,350, Air Wing: 2,480
Armament: Two *Sea Sparrow* missile launchers, three 20mm *Phalanx* CIWS mounts

Carriers

USS *Enterprise* (CVN 65)

Kitty Hawk-class

Length, overall: 1062.5 feet
Flight Deck Width: 252 feet
Beam: 130 feet
Displacement: Approx. 80,800 tons
Speed: 30+ knots (34.5+ mph)
Aircraft: 85
Crew: 3,150, Air Wing: 2,480
Armament: *Sea Sparrow* launchers, three 20mm *Phalanx* CIWS mounts

Carriers

USS *Kitty Hawk* (CV 63)

Photo by LT Doug Houser



▲ USS *Carl Vinson* (CVN 70)

OWNER'S & OPERATOR'S MANUAL

Aircraft

CARRIER BASED

F/A-18E/F Super Hornet

The F/A-18E/F will provide the carrier battle group with a strike fighter that has significant growth potential and increased range, endurance and ordnance-carrying capabilities. It will eventually replace the F-14 on carrier decks.

- Wingspan: 44 ft., 8.5 in.
- Length: 60 ft., 1.25 in.
- Height: 16 ft.
- Weight: 66,000 lbs. maximum takeoff
- Speed: Mach 1.8+
- Ceiling: 50,000 ft.
- Range: 462 nm
- Armament: 20mm MK-61 Vulcan cannon; Sidewinder, Sparrow and AMRAAM air-to-air missiles; Maverick, Harpoon, Shrike, HARM, SLAM-ER and Joint Direct Attack Munition (JDAM); Walleye and other bombs and rockets.
- Crew: 1 or 2

F/A-18 Hornet

The F/A-18 is an all-weather, attack aircraft that can also be used as a fighter. In its fighter mode, the F/A-18 is used primarily as an escort and for fleet air defense. In its attack mode, it is used for force projection, interdiction and close-air support

- Wingspan: 37.5 ft.
- Length: 56 ft.
- Height: 15 ft., 3.5 in.
- Speed: Mach 1.8+
- Range: 290 nm
- Armament: 20mm MK-61 Vulcan cannon; Sparrow III and Sidewinder air-to-air missiles; laser-guided and general purpose bombs; Harpoon and HARM
- Crew: 1 or 2

► F/A-18F Super Hornet

SQUADRONS

- Blue Angels
- VFA-2 Bounty Hunters
- VFA-15 Valions
- VFA-22 Fighting Redcocks
- VFA-25 Fist of the Fleet
- VFA-27 Royal Maces
- VFA-34 Blue Blasters
- VFA-37 Bulls
- VFA-81 Sunliners
- VFA-82 Marauders
- VFA-83 Rampagers
- VFA-86 Sidewinders
- VFA-87 Golden Warriors
- VFA-94 Mighty Shrikes
- VFA-97 Warhawks
- VFA-105 Gunslingers
- VFA-106 Gladiators
- VFA-113 Stingers
- VFA-115 Eagles
- VFA-122 Flying Eagles
- VFA-125 Rough Raiders
- VFA-131 Wildcats
- VFA-132 Privateers
- VFA-136 Knighthawks
- VFA-137 Kestrels
- VFA-146 Blue Diamonds
- VFA-147 Argonauts
- VFA-151 Fighting Vigilantes
- VFA-154 Black Knights
- VFA-192 Golden Dragons



Photo by Staff Sgt. Matthew Hammen

- VFA-195 Dambusters
- VFA-204 (USNR) River Rattlers
- VFC-12 (USNR) Fighting Omars

F-14 Tomcat

The F-14 is a supersonic, twin-engine, variable sweep-wing fighter designed to attack and destroy enemy aircraft at night and in all weather conditions. The F-14 can track up to 24 targets simultaneously with its advanced weapons control system and engage any of them with one of its six Phoenix missiles while continuing to scan the airspace. The F-14 Tomcat is being phased out and replaced by the F-18E/F Super Hornet.

- Wingspan: 64 ft., 1.5 in.
- Length: 62 ft., 8 in.
- Height: 16 ft.
- Weight: 74,349 lbs. maximum takeoff
- Speed: Mach 1.88
- Ceiling: 50,000 ft.
- Range: 1,600 nm (with external fuel)
- Armament: 20mm MK-61 Vulcan cannon; Sparrow, Sidewinder and Phoenix air-to-air missiles; laser-guided and general purpose bombs
- Crew: 2 (one pilot, one radar intercept officer)



Photo by PHAN Ryan T. O'Connor

▲ S-3B Viking

SQUADRONS

- VF-11 Red Rippers
- VF-14 Tophatters
- VF-31 Tomcatters
- VF-32 Swordsmen
- VF-41 Black Aces
- VF-101 Grim Reapers
- VF-102 Diamondbacks
- VF-103 Jolly Rogers
- VF-143 Puking Dogs
- VF-201 (USNR) The Hunters
- VF-211 Fighting Checkmates
- VF-213 Black Lions

EA-6B Prowler

The EA-6B, a twin-engine, mid-wing aircraft designed for carrier and advanced base operations, is used to provide an umbrella of protection for strike aircraft by jamming enemy radar, electronic data links and communications. The EA-6B is a fully integrated electronic warfare system, combining long-range, all-weather capabilities with advanced electronic countermeasures.

- Wingspan: 53 ft.
- Length: 59 ft., 10 in.
- Height: 16 ft., 3 in.
- Weight: 65,000 lbs. maximum takeoff
- Speed: 622 mph
- Ceiling: 41,200 ft.
- Range: 955 nm
- Armament: HARM
- Crew: 4 (one pilot, three electronic warfare officers)

SQUADRONS

- VAQ-129 Vikings
- VAQ-130 Zappers
- VAQ-131 Lancers
- VAQ-132 Scorpions
- VAQ-133 Wizards
- VAQ-134 Garudas
- VAQ-135 Black Ravens
- VAQ-136 Gauntlets
- VAQ-137 Rooks
- VAQ-138 Yellowjackets
- VAQ-139 Cougars
- VAQ-140 Patriots
- VAQ-141 Shadowhawks
- VAQ-142 Gray Wolves
- VAQ-209 (USNR) Star Warriors

S-3B Viking

The S-3B, a jet aircraft used for anti-submarine and anti-surface warfare, is extremely versatile and can be equipped for tanking, mining and limited electronic surveillance.

- Wingspan: 68 ft., 8 in.
- Length: 53 ft., 4 in.
- Height: 22 ft., 9 in.
- Weight: 52,539 lbs. maximum design gross weight
- Speed: 518 mph
- Ceiling: more than 35,000 ft.

- Range: more than 2,000 nm (combat)
- Armament: torpedoes, bombs, Harpoon and Maverick
- Crew: 4 (one pilot, two flight officers and one sensor operator)

SQUADRONS

- VS-21 Fighting Redtails
- VS-22 Checkmates
- VS-24 Scouts
- VS-30 Diamond Cutters
- VS-31 Top Cats
- VS-32 Maulers
- VS-33 Screwbirds
- VS-35 Blue Wolves
- VS-41 Shamrocks

E-2C Hawkeye

The E-2C is the Navy's all-weather, carrier-based tactical warning and control system aircraft. It provides airborne early warning and command and control functions for the battle group. Additional missions include: surface surveillance coordination, strike and interceptor control, search and rescue guidance and communications relay.

- Wingspan: 80 ft., 7 in.
- Length: 57 ft., 8.75 in.
- Height: 18 ft., 3.75 in.
- Weight: 53,288 lbs. maximum takeoff
- Speed: 389 mph
- Ceiling: 37,000 ft.
- Range: 1,541 nm (ferry range)
- Crew: 5 (two pilots, three mission systems operators)

SQUADRONS

- VAW-77 (USNR) Night Wolves
- VAW-78 (USNR) Fighting Escargots
- VAW-112 Golden Hawks
- VAW-113 Black Eagles
- VAW-115 Liberty Bells
- VAW-116 Sun Kings
- VAW-117 Wallbangers
- VAW-120 Greyhawks
- VAW-121 Bluetails

OWNER'S & OPERATOR'S MANUAL

Aircraft

VAW-123 Screwtops
VAW-124 Bear Aces
VAW-125 Tigertails
VAW-126 Seahawks

C-2A Greyhound

The C-2A is the principal aircraft used for COD (carrier on-board delivery) of personnel and materiel. It can deliver a payload of up to 10,000 lbs.

Wingspan: 80.5 ft.
Length: 57 ft., 10 in.
Height: 15 ft., 10.5 in.
Weight: 57,000 lbs. maximum takeoff
Speed: 310 mph
Ceiling: 33,500 ft.
Range: more than 1,040 nm (with freight)
Crew: 3 (one pilot, one co-pilot, one flight engineer)

SQUADRONS

VRC-30 Providers
VRC-40 Rawhides

SHORE-BASED

E-6B Mercury

The E-6B *Mercury* aircraft provides a survivable communications link between national decision makers and the country’s arsenal of strategic nuclear weapons. The E-6B enables the President of the United States and the Secretary of Defense to directly contact submarines, bombers and missile silos protecting our national security through deterrence.

Wingspan: 148 feet, 2 inches
Length: 152 feet, 11 inches
Height: 42 feet 5 inches
Weight: 341,000 lbs. maximum take-off
Speed: 523 mph
Ceiling: 42,000 feet
Range: more than 6,600 nm
Crew: 23

SQUADRONS

VQ-3 Ironman
VQ-4 Shadows
VQ-7 Roughnecks

P-3C ORION/ EP-3E ORION (ARIES II)

The P-3, a land-based, long-range patrol aircraft, has been in the Navy since the 1960s. Both versions provide multi-mission intelligence, surveillance, reconnaissance and combat capability to theater commanders worldwide.

Wingspan: 99 ft., 8 in.
Length: 116 ft., 10 in.
Height: 33 ft., 8.5 in.
Weight: 146,000 lbs. maximum permissible
Speed: 473 mph
Ceiling: 28,300 ft.
Range: 1,346 nm with three hours on station
Armament: *Harpoon* and *Maverick*; torpedoes; mines
Crew: 10 (three pilots, three flight officers/ engineers, three sensor operators, one in-flight technician)

SQUADRONS

VP-1 Screaming Eagles
VP-4 Skinny Dragons
VP-5 Mad Foxes
VP-8 Tigers
VP-9 Golden Eagles
VP-10 Red Lancers
VP-16 War Eagles
VP-26 Tridents
VP-30 Pro’s Nest
VP-40 Fighting Marlins
VP-45 Pelicans
VP-46 Grey Knights
VP-47 Golden Swordsmen
VP-62(USNR) Broad Arrows
VP-64(USNR) The Condors
VP-65(USNR) Tridents
VP-66(USNR) The Liberty Bells
VP-69(USNR) Totems
VP-92(USNR) Minutemen

◀ P-3C Orion

VP-94(USNR) Crawfishers
VQ-1 World Watchers
VQ-2 Sandman
VQ-11 (USNR) Bandits
VPU-1 Old Buzzards
VPU-2 Wizards

C-130 Hercules

The C-130 is probably the most versatile tactical transport aircraft ever built. Its uses have been almost limitless: transport, electronic surveillance, search and rescue, space-capsule recovery, helicopter refueling, gunship and special cargo delivery.

Wingspan: 132 ft., 7 in.
Length: 97 ft., 9 in.
Height: 38 ft., 10 in.
Weight: 175,000 lbs. maximum takeoff
Speed: 400 mph maximum
Ceiling: 28,000 ft.
Range: 4,460 nm
Crew: 4 (two pilots, one navigator, one loadmaster)

SQUADRONS

VR-53 (USNR) Capital Express
VR-54 (USNR) Revelers
VR-55 (USNR) Minutemen
VR-62 (USNR) Nor’easters

C-9B/DC-9 Skytrain II

The C-9B is used for fleet logistics support and military sealift.

Wingspan: 93 ft., 5 in.
Length: 119 ft., 3.5 in.
Height: 27.5 ft.
Weight: 121,000 lbs. maximum takeoff
Speed: 575 mph
Range: 2,185 nm
Crew: 5 (one pilot, one co-pilot, one crew chief, two attendants and 90 passengers)

SQUADRONS

VR-46 (USNR) Eagles
VR-52 (USNR) The Taskmasters
VR-56 (USNR) Globemasters
VR-57 (USNR) Conquistadores
VR-61 (USNR) Islanders

C-40A Clipper

The C-40A *Clipper* provides critical logistics support to the Navy. It's flight deck features a flight management computer system with an integrated GPS. It is compatible with future GATM/FANS operating environment (RNP-1). It is RVSM capable. It has the Traffic Alert and Collision Avoidance System II on board. It also has an enhanced ground proximity warning system, predictive wind shear, head-up display and TACAN/UHF/IFF functions.

The U.S. Naval Reserve—which operates and maintains the aircraft—is the first customer for the newest member of the Boeing Next-Generation 737 family. The *Clipper* was ordered by the Navy to replace its fleet of aging C-9 *Skytrains*. The C-40A is the first new logistics aircraft in 17 years to join the Naval Reserve. Currently, the Naval Reserve provides 100 percent of the Navy's worldwide in-theater medium and heavy airlift.

Propulsion: Two CFM56-7 SLST engines
Length: 110 feet 4 inches
Height: 41 feet 2 inches
Wingspan: 112 feet 7 inches
Weight: 171,000 lbs. maximum gross, take-off
Cruising Speed: Range: 0.78 to 0.82 Mach (585 to 615 mph)
Ceiling: 41,000 feet
Range: 3,000 nm, with 121 passengers or 40,000 lbs of cargo
Crew: Four

SQUADRONS

VR-58 (USNR) Sunseekers
VR-59 (USNR) Lone Star Express

▲ A C-9B Skytrain II assigned to the “Conquistadors” of Fleet Logistics Squadron Fifty Seven (VR-57) climbs above the clouds during a routine training flight.

C-12 Huron

The UC-12B/F/M *Huron* is a utility transport, equipped with high floatation landing gear and tip tanks. The UC-12F and UC-12M models also have hydraulically retractable landing gear.

Wingspan: 54 ft., 6 in.
Length: 43 ft., 9 in.
Height: 15 ft.
Weight: 12,500 lbs. maximum takeoff
Speed: 298 mph maximum
Ceiling: more than 35,000 ft.
Range: 1,965 nm
Crew: pilot only (or crew of two side by side)

OWNER’S &
OPERATOR’S
MANUAL

TRAINERS

T-34C Turbomentor

The T-34C is the Navy’s aircraft for primary pilot and navigator training. Six training squadrons are equipped with the *Turbomentor*. As of mid-1998, 313 T-34Cs remained in service, along with one NT-34C developmental aircraft. The Raytheon T-6A Texan TI will replace the T-34C beginning in 2003.

Wingspan: 33 ft., 4 in.
Length: 28 ft., 8.5 in.
Height: 9 ft., 11 in.
Weight: 4,274 lbs. maximum takeoff
Speed: 288 mph
Range: 650 nm
Ceiling: more than 30,000 ft.
Crew: 2 (one instructor, one student)

SQUADRONS

- VT-2 Doer Birds
- VT-3 Red Knights
- VT-4 Mighty Warbucks
- VT-6 Shooters
- VT-10 Wildcats
- VT-27 Boomers
- VT-28 Rangers

T-45A Goshawk

The T-45A *Goshawk*, a carrier-capable trainer aircraft, is replacing the T-2C *Buckeye* and TA–4J *Skyhawk* as the Navy’s strike trainer. The Navy has 187 T-45s in service.

Wingspan: 30 ft., 9.75 in.
Length: 39 ft., 4 in.
Height: 14 ft.
Weight: 14,081 lbs. maximum takeoff
Speed: 625 mph
Range: 826 nm
Ceiling: 40,000 ft.
Crew: 2 (one instructor, one student)

SQUADRONS

- VT-7 Eagles
- VT-21 Redhawks
- VT-22 Golden Eagles

T-2 Buckeye

The T-2 is a two-seat trainer used to school pilots and flight officers in basic and intermediate strike training.

Wingspan: 38 ft., 1.5 in.
Length: 38 ft., 3.5 in.
Height: 14 ft., 9.5 in.
Weight: 13,179 lbs. maximum takeoff
Speed: 522 mph
Range: 909 nm
Ceiling: 40,400 ft.
Crew: 2 (one instructor, one student)

SQUADRONS

- VT-9 Tigers
- VT-86 Sabre Hawks

T-6A Texan II

The T-6A *Texan II* is a tandem-seat, turboprop trainer used to train Navy and Marine Corps pilots and Naval Flight Officers.

The aircraft is one component of the Joint Primary Aircraft Training System (JPATS) along with simulators, computer-aided academics, and a training integration management system (TIMS). The joint program, that will replace Navy T-34C aircraft, uses commercial-off-the-shelf (COTS) subsystems to the maximum extent possible. The Navy’s total T-6A requirement is 328 aircraft. The Navy aircraft and ground-based training systems will be completely supported and maintained by commercial vendors with intermediate maintenance provided for selected systems at the operating site.

Wingspan: 33.4 feet
Length: 33.3 feet
Height: 10.8 feet
Weight: 6,500 lbs. maximum take-off
Speed: 270 knots

Range: 850 nm (max)
Ceiling: 31,000 feet
Crew: Two (instructor pilot, student pilot)

T-44A Pegasus

The T-44A is used to train Navy and Air Force pilots to fly multi-engine, turbo-prop aircraft such as the P-3 and the C-130.

Wingspan: 45 ft., 10.75 in.
Length: 39 ft., 9.5 in.
Height: 15 ft., 1.75 in.
Weight: 10,950 lbs. maximum takeoff
Speed: 267 mph
Range: 960 nm
Ceiling: 31,000 ft.
Crew: 2 (one instructor, one student)

SQUADRON

- VT-31 Wise Owls
- VT-35 Stingrays

T-39N/G Sabreliner

The 15 T-39 *Sabreliners* in service are used to train naval flight officer students in radar navigation and airborne radar-intercept procedures. These aircraft replaced the Cessna T-47As during the early 1990s. The eight T-39Gs are used for student non-radar training.

Wingspan: 44 ft., 5.25 in.
Length: 48 ft., 4 in.
Height: 16 ft.
Weight: 20,000 lbs. maximum takeoff
Speed: Mach .8
Range: 1,777 nm
Ceiling: 27,000 ft.
Crew: 2 (one instructor, one student)

SQUADRONS

- VT-86 Sabrehawks

RQ-2A Pioneer Unmanned Aerial Vehicle (UAV)

The *Pioneer* UAV system performs a wide variety of reconnaissance, surveillance, target acquisition and battle damage assessment missions. The UAV's low radar cross section, low infrared signature and remote control versatility provides a degree of cover for the aircraft. *Pioneer* provides the tactical commander with real-time images of the battlefield or target. Since first deployed as a land-based system in 1986, *Pioneer* is currently configured for operations on five LPD-class ships with a sixth ship under modifications.

The documented success of *Pioneer* in supporting combat operations and providing the battlefield commander critical intelligence information established the utility and importance of UAVs in combat.

Propulsion: Reciprocating 2-stroke, 2-cylinder 26-hp gasoline engine
Length: 14.0 ft
Wingspan: 16.9 ft
Weight: Max design gross take-off: 416 pounds (188.69 kg)
Speed: 110 knots (109.37 mph)
Ceiling: 15,000 feet
Range: 100+ nm.

Current Deployment:

- USS *Austin* (LPD 4)
- USS *Shreveport* (LPD 12)
- USS *Denver* (LPD 9)
- USS *Cleveland* (LPD 7)
- USS *Ponce* (LPD 15)
- USS *Duluth* (LPD 6)
- VC-6 Det. Patuxent River, Md.

HELICOPTERS

SH/HH-60 Seahawk

The SH-60E is a twin-engine helicopter used for anti-submarine warfare, search and rescue, drug interdiction, anti-ship warfare, cargo lift and special operations. The SH-60B is an airborne platform based aboard cruisers, destroyers and frigates,



Photo by PH3 William Howell

that deploys sonobuoys and torpedoes in an anti-submarine role while extending the range of the ship’s radar capabilities. The SH-60F is carrier based. The HH-60A is designed to accomplish today’s combat search and rescue mission as well as other replenishment and utility functions.

Length: 40 ft., 11 in. (rotors and tail pylon folded)
Height: 17 ft.
Weight: 21,884 lbs. maximum takeoff
Speed: 169 mph
Range: 380 nm
Armament: MK46/50 torpedoes (SH-60B/F); 7.62mm or .50-caliber machine guns (SH-60B); *Hellfire* and *Penguin* air-to-surface missiles
Crew: 3 (two pilots, one crewman (SH-60B); or 4 (two pilots, two crewmen (SH-60F).

SQUADRONS

- HS-2 Golden Falcons
- HS-3 Tridents
- HS-4 Black Knights
- HS-5 Nightdippers
- HS-6 Indians
- HS-7 Dusty Dogs
- HS-8 Eightballers
- HS-10 War Hogs
- HS-11 Dragonslayers
- HS-14 Chargers
- HS-15 Red Lions
- HS-75 (USNR) Emerald Knights
- HCS-4 (USNR) Red Wolves

▲ SH-60 Seahawk

- HCS-5 (USNR) Firehawks
- HSL-37 Easy Riders
- HSL-40 Airwolves
- HSL-41 Seahawks
- HSL-42 Proud Warriors
- HSL-43 Battle Cats
- HSL-44 Swamp Fox
- HSL-45 Wolfpack
- HSL-46 Grandmasters
- HSL-47 Sabrehawks
- HSL-48 Vipers
- HSL-49 Scorpions
- HSL-51 Warlords
- HSL-60 (USNR) Jaguars

MH-60 Knighthawk

The MH-60S is a twin-engine helicopter used for logistics support, vertical replenishment, search and rescue, naval special warfare support and future missions to include organic airborne mine counter-measures and combat search and rescue. It can accommodate 12 passengers, 4,733 pounds of internal cargo and 8,000 pounds of external cargo.

Length: 41.4 ft., 4 in. (rotors and tail folded; 64 ft., 10 in. (rotors turning)
Height: 17 ft.
Weight: 22,500 lbs., maximum take-off
Speed: 209 mph
Range: 250 nm.
Ceiling: 13,000 ft.
Crew: four (two pilots, two crew men).

Aircraft

SQUADRONS

- HC-3 Packrats
- HC-5 Providers
- HC-6 Chargers
- HC-8 Dragon Whales
- HC-11 Gunbearers

H-3 Sea King

The first version of this workhorse anti-submarine warfare helicopter was flown more than 38 years ago. The H-3’s versatility was emphasized during Operation Desert Shield/Desert Storm when 36 Sea Kings, flying from carriers, logged more than 5,000 hours conducting combat SAR, special operations, maritime interdiction operations, logistics support and mine hunting. The SH-3H has been replaced in the fleet by SH-60F and HH-60H aircraft. The UH-3Hs are programmed to be replaced by the CH-60 version of the Sikorsky Blackhawk/Seahawk.

- Length:** 72 ft., 8 in
- Height:** 16 ft., 10 in.
- Weight:** 21,000 lbs. maximum takeoff
- Speed:** 166 mph
- Ceiling:** 14,700 ft.
- Range:** 542 nm
- Armament:** MK46/50 torpedoes, 7.62mm machine guns
- Crew:** 3 to 4 (two pilots, 1 to 2 crewmen)

SQUADRONS

- HC-2 Fleet Angels
- HC-11 Gunbearers
- HC-85 (USNR) Golden Gaters
- HS-75 (USNR) Emerald Knights

Photo by JCS Stephen P. Weaver



▲ MH-53E Sea Dragon

TH-57 Sea Ranger

The TH-57 Sea Ranger is used to train several hundred student naval aviators with 45 TH-57Bs (for primary visual flight rules training) and 71 TH-57Cs (for advanced instrument flight rules training) in two helicopter training squadrons at NAS Whiting Field, Milton, Fla. Two TH-57Cs configured for RDT&E are used for photo, chase and utility missions at the Naval Air Warfare Center Aircraft Division at Patuxent River, Md.

- Length:** 39 ft.
- Height:** 10 ft.
- Weight:** 3,200 lbs. maximum takeoff
- Speed:** 138 mph
- Ceiling:** 20,000 ft., pressure altitude
- Range:** 368 nm
- Crew:** 5 (one pilot, four student pilots)

SQUADRONS

- HT-8 Eightballers
- HT-18 Vigilant Eagles

MH-53E Sea Dragon

The MH-53E, a mine-counter-measures derivative of the CH-53E Super Stallion, is heavier and has a greater fuel capacity than the Super Stallion. Capable of transporting up to 55 troops, the MH-53E can carry a

16-ton payload 50 nautical miles, or a 10-ton payload 500 nautical miles. In its primary mission of airborne mine countermeasures, the MH-53E is capable of towing a variety of mine-countermeasures systems.

- Length:** 99 ft. (rotors turning)
- Height:** 29 ft., 5 in. (tail rotor turning)
- Weight:** 73,500 lbs. maximum takeoff
- Speed:** 196 mph
- Ceiling:** 18,500 ft.
- Range:** 1,120 nm
- Crew:** 3 to 8 (two pilots, 1 to 6 crewmen)

SQUADRONS

- HC-4 Black Stallions
- HM-14 (USNR) Vanguard
- HM-15 (USNR) Blackhawks

SPECIAL SQUADRONS

- VC-6 Firebees
- VX-1 Pioneers
- VX-9 Vampires

SeaBees

1st Naval Construction Division (1NCD) and Naval Construction Forces Command (NCFC), NAB Little Creek, Va.

- 1NCD/NCFC
- 1NCD(FWD)

TRAINING COMPONENTS

- 20th Seabee Readiness Group (20SRG)
- 31st Seabee Readiness Group (31SRG)

- Active**
- 1NCD/NCFC
- 22NCR
- 1NCD(FWD)
- 30NCR

- Reserve**
- 3NCR
- 7NCR
- 1NCR
- 9NCR

NAVAL MOBILE CONSTRUCTION BATTALIONS (NMCB)

- Active**
- 1NCD/NCFC
- NMCB 1
- NMCB 7
- NMCB 74
- NMCB 133
- 1NCD(FWD)
- NMCB 5
- NMCB 3
- NMCB 4
- NMCB 40

- Reserve**
- 1NCD/NCFC
- NMCB 14
- NMCB 21
- NMCB 23
- NMCB 24
- NMCB 26
- NMCB 27
- 1NCD(FWD)
- NMCB 15
- NMCB 17
- NMCB 18
- NMCB 22
- NMCB 25
- NMCB 28

NAVAL AMPHIBIOUS CONSTRUCTION BATTALIONS (ACB)

- Active**
- ACB 1
- ACB 2

UNDERWATER CONSTRUCTION TEAMS (UCT)

- Active**
- 1NCD/NCFC
- UCT 1
- 1NCD(FWD)
- UCT 2

NAVAL CONSTRUCTION BATTALION UNITS (CBU)

- 1NCD/NCFC
- CBU 402
- CBU 403
- CBU 410
- CBU 411
- CBU 412
- CBU 415
- CBU 420
- CBU 422
- CBU 423
- 1NCD(FWD)
- CBU 401
- CBU 405
- CBU 406
- CBU 413
- CBU 416
- CBU 417
- CBU 418
- CBU 421
- CBU 427

▲ A U.S. Navy Seabee assigned to the 24th Marine Expeditionary Unit (MEU), saws off a pipe to apply a seal to the leaks on a broken pipe beside a bridge in Lutafiyah, Iraq.

CONSTRUCTION BATTALION MAINTENANCE UNIT (CBMU)

- 1NCD/NCFC
- CBMU 202
- 1NCD(FWD)
- CBMU 303

NAVAL CONSTRUCTION FORCE SUPPORT UNITS (NCFSU)

- 1NCD(FWD)
- NCFSU 2



Photo by U.S. Marine Corps Lance Cpl. Sarah A. Beavers

Weapons

STRATEGIC STRIKE

Trident I (C-4)

The *Trident I* replaced the *Poseidon* in the Navy's ballistic missile inventory. It became operational in 1979 and is carried on *Ohio*-class ballistic missile submarines.

Dimensions: 74 x 408 in.

Weight: 73,000 lbs.

Warhead: Designed to carry eight W76/MK 4

Propulsion: Cross-linked, double-base fuel rocket

Range: 4,000 nm.

Manufacturer: Lockheed-Martin

Trident II (D-5)

Larger and with longer range than the *Trident I*, the *Trident II* was first tested aboard a submarine in March 1989 and deployed in 1990.

Dimensions: 83 x 528 in.

Weight: 130,000 lbs.

Warhead: Designed to carry 12 W76/MK 4 or eight W88/MK 5

Propulsion: Solid-fuel rocket

Range: 4,000 nm.

Manufacturer: Lockheed-Martin

GENERAL-PURPOSE BOMBS

The MK-80 series general-purpose bomb family was created in the late 1940s and has been the standard air-launched bomb for the services ever since. The general-purpose bomb family is designed to provide blast and fragmentation effects and is used extensively in a number of configurations including laser-guided bombs (LGBs), joint direct attack munitions (JDAM) and air-delivered mining applications. The unguided versions of the general-purpose bomb can also be delivered in freefall or retarded modes depending upon mission requirements.

There were four basic versions of these

bombs in inventory for many years:

– 250 pound MK-81,

– 500 pound MK-82/BLU 111

– 1,000 pound MK-83/BLU 110 and

– 2,000 pound MK-84/BLU 117.

Production of the 250-pound general-purpose bomb has been discontinued and it is no longer carried in the active inventory. The remaining versions of the MK-80 series bombs are being converted from the MK designation to the bomb-loaded unit (BLU) designation during new production. The Navy's MK-80 series bombs remaining in inventory are filled with H-6 high explosive; the newer BLU series bombs incorporate a PBXN-109 explosive that provides less sensitive characteristics and is considered safer to handle and stow.

Laser-Guided Bomb (LGB) Kits

Laser-guided bomb kits were developed to enhance the terminal accuracy of air-launched, general-purpose bombs and entered the fleet's inventory in 1968. An LGB kit consists of a Computer Control Group and Air Foil Group. The kit is normally attached to a general-purpose bomb to form an LGB.

Joint Direct Attack Munition (JDAM)

The JDAM is a guidance kit that converts existing unguided bombs into precision-guided "smart" munitions. The tail section contains an inertial navigational system (INS) and a global positioning system (GPS). JDAM improves the accuracy of unguided bombs in any weather condition. It can be employed from every Navy fighter-attack aircraft such as the AV-8B, F/A-18 and F-14. Target coordinates can be loaded into the aircraft before takeoff, manually before weapon release, and automatically entered through target designation with onboard aircraft sensors.

Once released from the aircraft, the JDAM navigates to the target autonomously. In its most accurate mode the JDAM system



Photo by PH3 Alta I. Cutler

▲ 500-pound BLU-111 penetrator

will have an error of less than 40 feet.

JDAM enables multiple weapons to be directed against single or multiple targets on a single pass. The weapon's performance was demonstrated in 1999 during Operation *Allied Force*, Operations *Southern Watch* and *Enduring Freedom*; and in Operation *Iraqi Freedom*, with expenditures of more than 6,000 JDAMs against enemy targets.

JDAM provides the Navy with an all-weather, affordable, air-to-surface weapons with delivery accuracy exceeding requirements.

Length: (JDAM and warhead) GBU-31 (v) 2/B: 152.7 in.; GBU-31 (v) 4/B: 148.6 in.; GBU-32 (v) 2/B: 119.5 in.; GBU-38/B: 92.64 in.

Weight: (JDAM and warhead) GBU-31 (v) 2/B: 2,036 lbs.; GBU-31 (v) 4/B: 2,115 lbs.; GBU-32 (v) 2/B: 1,013 lbs.; GBU-38/B: 590 lbs.

Wing Span: GBU-31: 25 in.; GBU-32: 19.6 ins.

Range: Up to 15 miles

Ceiling: 45,000 + feet

Guidance System: GPS-aided INS

Contractor: Boeing Corporation.

Joint Stand-off Weapon (JSOW)

The joint standoff weapon is an air-launched "drop-and-forget" weapon that is capable of approximately 40 nautical mile stand-off ranges. JSOW provides the fleet with a strike interdiction capability against soft targets such as fixed and relocatable air defense elements, parked aircraft command and control facilities, light combat vehicles, industrial elements and enemy troops. Currently, two variants of JSOW are planned: AGM-154A, that uses general-purpose submunitions and JSOW C that employs a unitary type warhead.

Dimensions: 160 inches; box shaped diameter 13 inches on a side; 106 inches wingspan

Weight: From 1,065 pounds to 1,500 pounds

Range: Low altitude launch – 15 nautical miles, High altitude launch – 65 nautical miles

Warhead(s): BLU-97 – Combined effects bomblets, BLU-108 – Sensor fused weapon, Broach multi-stage warhead

Contractor: Raytheon Co.

▼ AGM-88 High-Speed Anti-Radiation Missiles (HARM)



Photo by PHAN Charles D. Whetstone

HARM (High-Speed Anti-Radar Missile)

HARM is the standard anti-radar missile in the U.S. inventory. It's used as both a strike-protection and anti-ship weapon. First deployed aboard USS *Kitty Hawk* (CV 63) in January 1984. First used in combat in April 1986 during raids on Libya.

Dimensions: 10 m x 13 ft. 7 in. x 44 in. wingspan

Weight: 798 lbs.

Warhead: 146 lbs.

Range: Depends on launch speed/altitude

Propulsion: Dual-thrust rocket motor (Mach 2+)

Manufacturer: Raytheon

HARPOON/SLAM-ER

The *Harpoon* and Stand-Off Land Attack Missile-Expanded Response (SLAM-ER) missiles are derivatives from the original Harpoon, which was conceived in 1965.

Harpoon

Air, surface-launched, anti-ship, all-weather cruise missile. Originally designed as an air-to-surface missile for the P-3 *Orion*, the *Harpoon*, which entered service in 1977, can now be carried by virtually all naval platforms.

Dimensions: 12.6 ft. long-air launched; 15.2 ft. long-surface launched.

Weight: 1,160 lbs. (air launch), 1,459 lbs. (ASROC launcher), 1,520 lbs. (SAM launcher), 1,523 lbs. (capsule/canister launch)

Speed: High subsonic speeds

Warhead: 488.5 lbs. HE (blast; semi-armor piercing)

Propulsion: Turbojet (cruise) w/solid-fuel booster for ship launch

Range: 75 nm.

Manufacturer: The Boeing Company

Stand-Off Land Attack Missile-Expanded Response (SLAM-ER)

SLAM-ER is an upgrade to the SLAM and is currently in production. SLAM-ER has a greater range (150+ miles), a titanium warhead for increased penetration and software improvements which allow the pilot to retarget the impact point during the terminal phase of attack. It is also the first land-attack missile equipped with automatic target acquisition for precision targeting.

Maverick

The *Maverick* is a short-range, air-to-surface, tactical missile. The version used by the Navy carries a warhead designed to penetrate large, hard targets. First deployed in August 1972.

Dimensions: 8.2 ft. long; 12 in. diameter;

2.4 ft. wing span

Weight: 635 lbs.

Warhead: 300 lbs.

Propulsion: Two-stage, solid-fuel rocket motor

Speed: Supersonic

Range: Approx. 14 nm.

Manufacturer: Hughes/Raytheon

Tomahawk Cruise Missile

An all-weather, ship- or submarine-launched, cruise missile. *Tomahawks* have proven to be highly survivable weapons due to their low radar detectability and terrain/wave-skimming flight. First deployed in 1986.

Dimensions: 18.3 ft. long (20.6 ft. with booster); 20.4 in. diameter; 8.9 ft. wingspan

Weight: 2,650 lbs. (3,200 lbs. with booster)

Warhead: 1,000 lbs. (conventional) or conventional submunitions dispenser with combined-effect bomblets

Propulsion: Turbojet (cruise); solid-fuel booster (launch)

Speed: Subsonic

Range: 870 nm. (land attack/conventional warhead)

Manufacturer: Raytheon

OWNER'S & OPERATOR'S MANUAL

Weapons

Penguin Anti-ship Missile

The Norwegian-designed and built *Penguin* anti-ship missile is carried aboard Lamps III helicopters. First deployed in 1993.

- Dimensions:** 10 ft long; 11.2 in. diameter; 39 in. wingspan
- Weight:** 847 lbs.
- Propulsion:** Solid-fuel rocket motor/solid-fuel booster
- Warhead:** 265 lbs., semi-armor piercing
- Range:** 25 nm. Speed: Mach 1.2
- Manufacturer:** Konigsberg Vaapenfabrikk (Norway)

ANTI-AIR WARFARE (AAW) AIRCRAFT GUNS

M61A1

This 20mm Gatling gun, which also forms the basis for the *Phalanx* Close-In Weapons System (see “Anti-aircraft Warfare” section), is mounted aboard the F/A-18 *Hornet* and F-14 *Tomcat*.

- Caliber:** 20mm//62
- Muzzle Velocity:** 3,400 ft./sec.
- Rate of Fire:** 4,000 or 6,000 rounds/min.
- Weight:** 841 lbs. total (gun, feed system, ammunition)
- Manufacturer:** General Electric

SURFACE-TO-AIR MISSILES

Rolling Airframe Missile (RAM)

Developed jointly with the Federal Republic of Germany, RAM provides ships with a low-cost, self-defense system against anti-ship missiles.

- Dimensions:** 9.25 ft. long; 5 in. diameter; 1.5 ft. wingspan
- Weight:** 162 lbs.
- Warhead:** 25 lbs.
- Propulsion:** Solid-fuel rocket
- Range:** 5 nm.
- Speed:** Supersonic
- Manufacturer:** Raytheon

STANDARD MISSILE-1 (SM-1)/ STANDARD MISSILE-2 (SM-2)

Designed as a surface-to-air and surface- to-surface missile, the Standard missile is currently employed in two variations: SM-1/SM-2 MR (medium range) and SM-2 ER (Extended Range).

The first *Standard* missile entered the fleet in 1970. The SM-2 ER arrived in 1981.

SM-1/SM-2 MR

- Dimensions:** 14.7 ft. long; 13.5 in. diameter; 3.6 ft. wingspan
- Weight:** 1,100 lbs. (SM-1); 1,380 lbs. (SM-2)
- Warhead:** Proximity fuse/high-explosive
- Propulsion:** Dual thrust/solid-fuel rocket
- Range:** 15 to 20 nm. (SM-1); 40 to 90 nm. (SM-2 MR)
- Manufacturer:** Raytheon

SM-2 ER

- Dimensions:** 26.2 ft long; 13.5 in. diameter; 5.2 ft. wingspan
- Weight:** 2,980 lbs.
- Warhead:** Proximity fuse/ high-explosive
- Propulsion:** Two-stage/solid-fuel rocket; sustainer motor and booster motor
- Range:** 65 to 100 nm.
- Manufacturer:** Raytheon

AIR-TO-AIR MISSILES

Advanced, Medium-Range, Air-to-Air Missile (AMRAAM)

An all-weather, all-environment, radar guided missile developed as a follow-on to the Sparrow missile series. AMRAAM is smaller, faster, lighter and has improved capabilities against very low-altitude and high-altitude targets in an electronic counter-measure environment. Its active radar, in conjunction with an inertial reference unit and microcomputer system makes the

▲ Sea Sparrow missile

missile less dependent on the aircraft fire control system enabling the pilot to aim and fire several missiles at multiple targets. The AMRAAM is a result of a joint U.S. Navy and U.S. Air Force development effort and is in service with numerous NATO and Allied countries. The AMRAAM was deployed in September 1991 and is carried on the F/A-18 *Hornet*.

- Dimensions:** 12 ft. (long); 7 in. diameter; 21 in. wingspan
- Weight:** 335 lbs.
- Warhead:** Blast fragmentation; high explosive
- Propulsion:** High performance, solid fuel rocket motor
- Speed:** Supersonic
- Manufacturer:** Raytheon

AIM-54 Phoenix Missile

The *Phoenix* missile is the Navy's only long-range, air-to-air missile. The missile is designed for use in all-weather and heavy jamming environments. The improved *Phoenix*, the AIM-54C, can better counter projected threats from tactical aircraft and cruise missiles.

- Dimensions:** 13 ft. long; 15 in. diameter; 36 in. wingspan
- Weight:** 1,024 pounds
- Propulsion:** Solid propellant rocket motor
- Warhead:** 135 lb., proximity fuse, high explosive
- Range:** In excess of 100 nm.
- Speed:** In excess of 3,000 mph

Sparrow

A highly-maneuverable, all-weather, beyond-visual-range, semi-active radar homing air-to-air missile used by the United States, NATO and other allied forces. A shipboard version, the *Sea Sparrow*, provides U.S. Navy and NATO ships with an effective, anti-air weapon. First deployed in 1958, numerous models and upgrades have occurred to the *Sparrow* missile family. Current air-to-air versions are carried on the F-14 and F/A-18 aircraft.

- Dimensions:** 12 ft. long; 8 in. diameter; 3.4 ft. wingspan
- Weight:** 500 lbs.
- Warhead:** 88 lbs. annular blast fragmentation
- Propulsion:** Solid-fuel rocket motor
- Speed:** Supersonic
- Manufacturer:** Raytheon

Sidewinder

The *Sidewinder* is a short-range, infrared, within visual range air-to-air missiles used by the United States, NATO and other allied nations. The missile has been through a number of modernizations and the current fleet weapon is the AIM-9M. The missile is an all-aspect heat-seeking missile with improved capabilities against countermeasures. A major modification to the AIM-9M *Sidewinder* is the AIM-9X.

The AIM-9X is a joint U.S. Navy and U.S. Air Force program that upgrades the missile with a staring focal plan array in the seeker, and extremely agile airframe and state-of-the-art signal processors resulting in enhanced target acquisition, missile kinematics and improved infrared counter-countermeasure capabilities. The missile’s high off boresight capability can be coupled to a helmet-mounted cueing system that will revolutionize the way that air-to-air missiles are employed. The Sidewinder is currently deployed on the F-14, F/A-18, AV-8 and AH-1 aircraft

- Dimensions:** 9.6 ft. long; 5 in. diameter; 2.1 ft. wingspan
- Weight:** 190 lbs.
- Warhead:** 20.8 blast fragmentation

- Propulsion:** High performance, solid-fuel rocket motor
- Speed:** Supersonic
- Manufacturer:** Raytheon

SHIPBOARD GUNS

MK-45 – 5-inch/54-caliber lightweight gun

This 54-caliber, lightweight gun provides surface combatants accurate naval gunfire against fast, highly-maneuverable, surface targets, air threats and shore batteries during amphibious operations.

- Caliber:** 5 inch/54 inch
- Shell Weight:** 70 lbs.
- Firing Rate:** 20 rounds per minute
- Muzzle Velocity:** 2,650 ft./sec
- Range:** 13 nm.
- Magazine Capacity:** 475 to 500 rounds
- Weight:** 47,820 lbs.

MK-38 – 25 mm machine gun system

The naval version of the Army *Bushmaster*, or “Chain Gun.” This single-barrel, air-cooled, heavy machine gun meets the needs of ships throughout the fleet, especially those operating in the Arabian Gulf.

- Caliber:** 25mm/87
- Round Weight:** 1.1 lbs.
- Muzzle Velocity:** 1,100 m/sec
- Range:** 2,700 yds.
- Type of Fire:** Single shot; 175 rounds/min. in automatic
- Manufacturer:** Crane Division, Naval Surface Warfare Center

MK-75 – 76mm/62 caliber 3-inch gun

Best suited for use aboard smaller combat vessels, the MK-75 features rapid fire capability with low manning requirements. The gun was approved for fleet use in 1975 and was first deployed aboard USS *Oliver Hazard Perry* (FFG 7) in 1978.

- Caliber:** 3-inch/62
- Firing Rate:** 85 rounds/min.

- Muzzle Velocity:** 925 m/sec
- Range:** 10 nm.
- Weight:** 7.35 tons
- Manufacturer:** FMC Naval Systems Division and OTO Melara

Phalanx Close-In Weapons System (CIWS)

The *Phalanx* CIWS combines a 20mm Gatling gun with search and tracking radar to provide surface ships with terminal defense against anti-ship missiles. The system underwent operational tests and evaluation on board USS *Bigelow* (DD 942) in 1977 and went into production in 1978 with the first systems installed aboard USS *Coral Sea* (CV 43) in 1980. The original versions used rounds made from depleted uranium that have since been replaced by tungsten rounds.

- Caliber:** 20mm/53
- Firing Rate:** 1,000-3,000 rounds/min.
- Muzzle Velocity:** 3,650 ft./sec
- Range:** 6,000 yds.
- Manufacturer:** Hughes Missile Systems Company



▲ USS *Kitty Hawk's* CIWS (Close-in Weapon System) in action.

OWNER’S & OPERATOR’S MANUAL

Weapons

60mm Mortar

Often combined with the M-60 machine gun, the 60mm mortar is used aboard patrol boats (PBs).

Caliber: 60mm

Firing Rate: 10 rounds/min. (trigger mode); 18 rounds/min. (drop mode)

Muzzle Velocity: 500 ft./sec

Range: 1,850 to 2,000 yds.

ANTI-SUBMARINE WARFARE (ASW) TORPEDOES

MK-46

The MK 46 MOD 5A(S) torpedo achieved its initial operational Capability and was introduced into the fleet in 1979. It can be launched from fixed and rotary wing aircraft and surface combatants VLA and torpedo tubes. Full-up MK 46 torpedoes are no longer being produced. In 1987, a major upgrade program enhanced the performance of the MK 46 Mod 5A(S) in shallow water.

A service life extension program was initiated in 1992 to extend the life of the MK 46 Mod 5A(S), convert it to the MK 46 Mod 5A(SW), and to provide additional shallow water and bottom avoidance modes. The MK 46 Mod 5A(SW) was introduced to the Fleet in 1996.

Dimensions: 8.5 ft. long, 12.75 in. diameter

Weight: 512 lb.

Range: More than 8,000 yds.

Speed: 45 Knots

Propulsion: Two-speed, reciprocation external combustion

Warhead: 96 lbs. of PBXN-103

Depth: Greater than 1,200 ft.

Original Manufacturer: Alliant Techsystems, Honeywell

MK-48

The MK-48 Torpedo is a long-range, high-speed, deep-depth, wire-guided acoustic homing weapon designed to combat slow diesel submarines, fast, deep diving nuclear submarines and high-performance surface ships and can be carried aboard all Navy submarines. Developed by the Applied Research Laboratory, Pennsylvania State University, and Westinghouse Electric Corporation, Baltimore, the MK-48 and its subsequent variants have been in service with the Navy since 1972.

In 1975 an operational requirement was issued by OPNAV to develop modifications to the MK-48 to keep pace with threat advancements. This development effort was accelerated to neutralize the former Soviet Alpha threat and resulted in the MK-48 MOD 4 that achieved Initial Operational Capability in 1980.

Additional efforts resulted in development of the digital advanced capability (ADCAP) MK-48 MOD 5 that is carried by *Los Angeles* and *Seawolf*-class attack submarines and some Ohio-class ballistic missile submarines. The MK-48 MOD 5 became operational in 1988 and was

approved for production a year later.

Although full-up torpedoes have not been produced since 1994, modifications (ADCAP MODS) produced by Northrup Grumman and Raytheon Systems Corporation have enhanced its counter-measure rejection capability, increased its guidance and control processing and memory and improved its shallow water capabilities. This newest variant is designated the MK-48 MOD 6.

Dimensions: 19 feet long, 21 in. diameter

Weight: 3,434 lbs. (MK-48) 3,695 (MK-48 ADCAP)

Range: Greater than 8 nm.

Speed: Greater than 28 Knots

Propulsion: Positive displacement

Piston-type engine with OTTO fuel II

Warhead: Not given

Depth: Not given

Original Manufacturer: Gould

▼ MK-50 Torpedo



Photo by PH1 Brian Aho

MK-50

The MK-50 torpedo began low-rate initial production in 1987. The MK-50 can be launched from all ASW aircraft and from torpedo tubes aboard surface combatants. It is an advanced lightweight digital torpedo designed for use against faster, deeper-diving and more sophisticated submarines.

The stored chemical energy propulsion system develops full power at all depths and is capable of multi-speed operations required by the tactical situation. Although full-up torpedoes have not been produced since 1993, the Block I software upgrade program has enhanced the MK 50's shallow water and countermeasure capability. Also a new longer-lasting, safer and cheaper stored chemical energy propulsion system is currently being introduced.

Dimensions: 9.3 ft. long, 12.75 in. diameter

Weight: 750 lbs.

Range: In excess of 14,000 yds.

Speed: Multiple speeds with a top speed in excess of 40 knots

Propulsion: Close-cycle Stored Chemical Energy Propulsion System

Warhead: Approximately 100 lbs. high explosive shaped charge

Depth: 3,600 ft.

Original Manufacturer: Alliant Techsystems, Westinghouse

MINES

MK-67 Submarine Launched Mobile Mine (SLMM)

Based on the MK 37 torpedo, the SLMM is a submarine-deployed mine used for covert mining in hostile environments. The MK-67 began active service in 1987.

Type: Submarine-laid bottom mine.

Dimensions: 13.4 ft. long; 19 in. diameter

Detection System: Magnetic/seismic target detection devices (TDDs)

Depth Range: Shallow water

Weight: 1,735 pounds

Explosives: 515 pounds of high explosive

MK-65 Quickstrike

The *Quickstrike* is a family of shallow-water, aircraft-laid mine used primarily against surface ships. The MK-65 mine is a thin-walled mine casing. MK-62 and MK-63 mines are converted, general-purpose bombs All were approved for service use in the early 1980s.

Type: Aircraft-laid bottom mine.

Dimensions: MK-65 mine is 10.7 ft. long; 21 in. diameter (29 in. across fins; MK-62 and MK-63 mines vary in length depending on flight gear used

Detection System: Magnetic/seismic/ or magnetic/seismic/pressure target detection devices (TDDs) are used on various models.

Depth Range: Shallow water

Weight: MK-62, MK-63 and MK-65 are 500, 1,000 and 2,000 pound class respectively

Explosives: Various loads

MK-60 Captor

The *Captor* is the Navy's primary, anti-submarine weapon. This deep-water mine is designed to be laid by aircraft or submarines and is anchored to the ocean floor. Its acoustic detection system is designed to seek hostile submarines, while ignoring surface craft and friendly submarine acoustic signatures. Upon detection of a hostile submarine, the *Captor* launches an MK-46 Mod 4 torpedo. First fleet use in 1979.

Type: Aircraft, ship or submarine-laid, magnetically-moored mine.

Dimensions: Aircraft/Ship laid: 12 ft. long/21 in. diameter; Submarine laid: 11 ft. long/21 in. diameter

Detection System: Reliable acoustic path (RAP) sound propagation.

Depth Range: Up to 3,000 ft.

Weight: Air/Ship laid: 2,370 pounds; submarine laid: 2,056 pounds

Explosives: 96 pounds of PBXN 103 high explosive MK-46 torpedo.

MK-56

The MK-56 mine is primarily an ASW mine (the oldest still in use). It reached initial operating capability in 1962.

Type: Aircraft-laid, moored mine

Dimensions: 9.5 ft. long (without fairing); 23 in. diameter

Detection System: Total field magnetometer.

Depth Range: intermediate water

Weight: 2,000-pound class

Explosives: 360 pounds of high explosive

Sources: Atlantic Ordnance Command, Yorktown, Va.; Strategic Systems Programs; Naval Sea Systems Command, Naval Air Systems Command.

▼ MK-65 Quickstrike



Photo by PH2 Scott Taylor

OWNER'S & OPERATOR'S MANUAL

Education

THE NAVY'S EDUCATION PROGRAMS FIT EVERY NEED

Sea Warrior

The Revolution in Training continues to align training and educational opportunities with the needs of the fleet and our Sailors through Sea Warrior, the Navy's human resource pillar that supports Sea Power 21. Sea Warrior integrates the Navy's manpower, personnel and training organizations—active and Reserve—into a single, efficient, information-rich human resource management system.

Naval training and education supports all Sailors with a career learning continuum and the tools they need to not only operate, but to excel in the increasingly demanding and dynamic environment of today's Navy. Navy Knowledge Online offers a 24/7 resource for Sailors to track their progression through their personal Five Vector Model (5VM), a detailed roadmap for success while in the Navy and beyond.

For more information on the Revolution in Training, visit the Naval Personnel Development Command Web site at: <https://www.npdc.navy.mil/>

Naval Heritage

The Navy has made a concerted effort to ensure new Sailors, both officer and enlisted, receive a strong indoctrination in naval history and naval heritage. Beginning in 2005, all newly-enlisted Sailors will receive a copy of *A Sailor's History of the U.S. Navy*, written by Thomas J. Cutler.

Naval heritage is a part of every General Military Training (GMT) session for FY05. For more information on naval heritage, visit the NETC Web site at <https://www.netc.navy.mil>, and for questions regarding GMT, e-mail the program coordinators at GMT.DISTRIBUTION@NAVY.MIL.

Human Performance Center

The Human Performance Center (HPC) determines the optimum ways to alleviate performance deficiencies in a disciplined, systematic approach. An analysis of the entire system affecting mission accomplishment is conducted with primary focus on all factors affecting performance, not simply human deficiencies.

HPC has assisted in revamping and improving weapons handling, flight deck safety and air intercept controller performance; and reducing training costs and oil spill occurrences, to name just a few. For more information on HPC visit the HPC Web site at: <http://www.hpc.navy.mil/>

Professional Military Education

To support mission accomplishment and professional growth, Naval Education and Training Command (NETC) provides a Professional Military Education (PME) Continuum for all Sailors—officer and enlisted. The Continuum includes advanced education (beyond secondary school level), traditional Navy-specific Professional Military Education (NPME), Joint Professional Military Education (JPME) and leadership development.

For more information on PME, visit the NETC Web site at <https://www.netc.navy.mil>

Navy College Program

Record numbers of Sailors are taking college courses, thanks to the wide spectrum of assistance programs now available in the Navy. Visit your local Navy College Office (NCO) is the first step to learn about the wide variety of college level examinations available, such as the Defense Activity for Non-Traditional Education Support (DANTES) Examination Program, the College Level Examination Program (CLEP) and the Defense Subject Standardized Tests (DSST) program. In addition to pursuing actual courses through residential or distance learning, Sailors can take tests in a variety of subjects and receive recommended college credit for each test successfully completed. For more information visit the Navy College Web site at: <https://www.navycollege.navy.mil/>

Tuition Assistance

One of the more popular educational assistance programs is the Tuition Assistance (TA) program. NETC funds 100 percent of authorized tuition and fees for Sailors, up to a maximum of \$250 per semester hour for up to 12 semester hours per fiscal year. The \$250 per semester hour (or semester hour equivalent) payment applies only to authorized tuition and fees related to course enrollment; it does not apply to books or other expenses. The 12-semester hour limit per fiscal year applies to all Sailors.

FY04, with more than 55,000 participants took more than 137,000 courses—an increase of more than 10 percent in both courses and participants from FY03. TA program growth has almost doubled since FY02, with more than 75 million dollars expended in support of FY04 participants. For more information visit the Navy College Web site at: <https://www.navycollege.navy.mil/>



Montgomery GI Bill

Many Sailors have also elected to contribute to the Montgomery GI Bill (MGIB), which can be used to fund college courses, by itself or in conjunction with TA (while on active duty). For further information check either the VA Web site: <http://www.gibill.va.gov> or your NCO for updates.

Veterans' Affairs (VA) Educational Assistance Programs

Another Veterans' educational assistance program is the post-Vietnam Era Veterans' Educational Assistance Program (VEAP). For more information, contact the local NCO, the VA office at the college or university they attend or Navy Personnel Command, PERS-604, at DSN 882-4258/59 or 901-874-4258/59. The VEAP Web site is: <http://www.gibill.va.gov/>

SMART

The Sailor/Marine American Council on Education Registry Transcript (SMART) is now available to document American Council on Education (ACE) recommended college credit for military training and occupational experience. SMART has two versions: the Individual Copy is for the Sailor's personal information and contains instructions for correcting errors or omissions. The Institutional Copy is an official transcript sent directly to an academic institution of the Sailor's choice.

To obtain either an Individual (unofficial) or Institutional SMART, go to the Web site <https://smart.cnet.navy.mil>, visit your local NCO or contact the Navy College Center (NCC) toll free at 1-877-253-7122 or by e-mail at NCC@CNET.Navy.mil.

Navy College Program for Afloat College Education (NCPACE)

NCPACE is designed to help Sailors continue their education while deployed aboard ships. All NCPACE college courses are provided by accredited colleges and universities, and are 100 percent funded by the Navy with the individual Sailor only paying for books. For more information visit the NCPACE Web page at: <https://www.navycollege.navy.mil/ncp/pace.html>

Navy College Program Distance Learning Partnership

To provide greater access to higher education, the Navy College Program has developed various partnerships with colleges and universities to offer rating-related degrees through distance learning. These education partnerships provide Associate's and Bachelor's Degree programs related to various ratings, and make maximum use of military professional training and experience to fulfill degree requirements.

Courses are offered in a variety of formats, such as CD-ROM, videotape, video-teleconference and web-based courses. Contact the nearest NCO about degree programs available from your partnership schools, or visit: <https://www.navycollege.navy.mil/storefront.cfm>

Servicemember's Opportunity Colleges, Navy (SOCNAV)

SOCNAV is comprised of 85 accredited colleges that offer specific Associate's and Bachelor's Degrees to Navy members worldwide through both residential and distance learning options. Member institutions agree to require only a minimum number of the courses to be taken from the home institution and they guarantee transferability of most courses from other SOCNAV institutions, thereby providing the individual Sailor tremendous flexibility in pursuing a college degree. For more information contact the nearest NCO or visit: <https://www.navycollege.navy.mil/ncp/socnav.html>

(Source: Naval Education and Training Command public affairs office.)

OWNER'S & OPERATOR'S MANUAL

MCPON Reading List

The following books comprise the Master Chief Petty Officer of the Navy’s Naval Heritage/Core Values Reading Guide. This list is updated periodically as part of the Chief Petty Officer selection Season. The books are available at your local library or through the Navy Exchange or the Uniform Center toll-free ordering system.

The Leadership, Management and Personal Growth Reading Guide is intended as a guide for all enlisted Navy leaders. Each of the books on this list contains sound management concepts and ideas, many of which can be applied to your leadership role in the Navy. Keep in mind that these books are written by civilians, for the civilian workplace, so not everything will directly apply.

“A” LIST: SUGGESTED READING

- A Most Fortunate Ship: Narrative History of Old Ironsides**
by Tyrone G. Martin
- A Sailor’s Log: Recollections of Forty Years of Naval Life**
by Rear Adm. Robley D. Evans
- A Voice From the Main Deck: Being a Record of the Thirty Years’ Adventures of Samuel Leech**
by Samuel Leech
- Battleship Sailor**
by Theodore C. Mason, Edward L. Beach Jr.
- Brave Ship, Brave Men**
by Arnold S. Lott
- Crossing the Line: A Bluejacket’s World War II Odyssey**
by Alvin Kernan
- Descent Into Darkness**
by Edward C. Raymer
- Devotion to Duty: A Biography of Admiral Clifton A.F. Sprague**
by John F. Wukovits, Thomas B. Buell
- Divided Waters: The Naval History of the Civil War**
by Ivan Musicant
- Every Other Day: Letters from the Pacific**
by George B. Lucas
- Good Night Officially: The Pacific War Letters of a Destroyer Sailor**
by James O. Raines, William M. McBride (editor)
- In Harm’s Way: The Sinking of the USS**

- Indianapolis and the Extraordinary Story of Its Survivors**
by Doug Stanton
- In Love and War: The Story of a Family’s Sacrifice During the Vietnam Years (Revised and Updated)**
by Jim and Sybil Stockdale
- Iwo**
by Richard Wheeler
- Life in Mr. Lincoln’s Navy**
by Dennis J. Ringle
- Naked Warriors: The Story of the U.S. Navy Frogmen**
by Frances Douglas Fane and Don Moore
- Nimitz**
by E.B. Potter
- Quiet Heroes: Navy Nurses of the Korean War 1950-1953**
by Frances Omori
- Raiders from the Sea: The Story of the Special Boat Service in World War II**
by John Lodwick
- Raiders of the Deep**
by Lowell Thomas, Gary E. Weit (photographer)
- Shield and Sword: The United States Navy and the Persian Gulf War**
by Edward J. Marolda and Robert J. Schneller Jr.
- Ship’s Doctor**
by Terrence Riley
- Submarine Diary: The Silent Stalking of Japan**
by Corwin Mendenhall, I.J. Galantin
- The Battle of Cape Esperance: Encounter at Guadalcanal**
by Charles O. Cook
- The Fast Carriers: The Forging of an Air Navy**
by Clark G. Reynolds
- The Fighting Liberty Ships: A Memoir**
by A.A. Hoehling
- The Golden Thirteen: Recollections of the First Black Naval Officers**
by Paul Stillwell
- The Last Patrol**
by Harry Holmes
- Thunder Below: The USS Barb Revolutionizes Submarine Warfare in World War II**
by Eugene B. Fluckey
- Tin Can Sailor: Life Aboard the USS Sterett, 1939-1945**
by C. Raymond Calhoun
- We Will Stand By You: Serving in the Pawnee, 1942-1945**
by Theodore C. Mason

- What a Way to Spend a War: Navy Nurse POWs in the Philippines**
by Dorothy Still Danner

“B” LIST: REFERENCE

- A Quest for Glory: A Biography of Rear Admiral John A Dahlgren**
by Robert J. Schneller Jr.
- Admiral John H. Towers: The Struggle for Naval Air Supremacy**
by Clark G. Reynolds
- Air Raid: Pearl Harbor!: Recollections of a Day of Infamy**
by Paul Stillwell
- All at Sea: Coming of Age In World War II**
by Louis R. Harlan
- American Naval History: An Illustrated Chronology of the U.S. Navy and Marine Corps, 1775-Present**
by Jack Sweetman
- Assault from the Sea: The Amphibious Landing at Inchon**
by Curtis A. Utz
- At Dawn We Slept: The Untold Story of Pearl Harbor**
by Gordon W. Prange
- Authors at Sea: Modern American Writers Remember Their Naval Service**
by Robert Shenk
- Book of Navy Songs**
by The Trident Society
- Clash of the Titans: World War II at Sea**
by Walter J. Boyne
- Cordon of Steel: The U.S. Navy and the Cuban Missile Crisis**
by Curtis A. Utz
- Crossed Currents: Navy Women from World War I to Tailhook**
by Jean Ebbert, Marie-Beth Hall
- E-Boat Alert: Defending the Normandy Invasion Fleet**
by James Foster Tent
- Great American Naval Battles**
by Jack Sweetman
- Heroes in Dungarees: The Story of the American Merchant Marines in World War II**
by John Bunker
- History of the U.S. Navy, Vol. 1, 1775-1941**
by Robert W. Love Jr.
- History of the U.S. Navy, Vol. 2, 1942-1991**
by Robert W. Love Jr.
- History of U.S. Naval Operations in World War II, Vol.I-XV, by Samuel Eliot Morison**

- Honor Bound: American Prisoners of War in Southeast Asia, 1961-1973**
by Stuart I. Rochester, Frederick T. Wiley
- Kinkaid of the Seventh Fleet: A Biography of Admiral Thomas C. Kinkaid, U.S. Navy**
by Gerald E. Wheeler
- Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time**
by Dava Sobel
- Magnificent Mitscher**
by Theodore Taylor, Jeffrey G. Barlow
- Miracle at Midway**
by Gordon W. Prange
- Okinawa: The Last Battle of World War II**
by Robert Leckie
- One Hundred Years of Sea Power: The U.S. Navy, 1890-1990**
by George W. Baer
- Prisoners of the Japanese**
by Gavan Daws
- PT 105**
by Dick Keresey
- Quiet Warrior: A Biography of Admiral Raymond A. Spruance**
by Thomas B. Buell
- Revolt of the Admirals: The Fight for Naval Aviation 1945-1950**
by Jeffrey Barlow, Dean C. Allard
- Rocks & Shoals: Naval Discipline in the Age of Fighting Sail**
by James E. Valle
- Run Silent,Run Deep**
by Edward L. Beach Jr.
- Sea Power: A Naval History**
by E.B. Potter (editor)
- Submarine Admiral: From Battlewagons to Ballistic Missiles**
by I.J. Galantin
- Submarine Commander: A Story of World War II and Korea**
by Paul R. Schratz

- The First Team: Pacific Naval Air Combat from Pearl Harbor to Midway**
by John B. Lundstrom
- The First Team and the Guadalcanal Campaign: Naval Fighter Combat from August to November 1942**
by John B. Lundstrom
- This People’s Navy: The Making of American Sea Power**
by Kenneth J. Hagan
- The Two Ocean War: A Short History of the United States Navy in the Second World War**
by Samuel Eliot Morison
- The Unsinkable Fleet: The Politics of U.S. Navy Expansion in World War II**
by Joel R. Davidson
- U-Boat Commander: A Periscope View of the Battle of the Atlantic**
by Peter Cremer, Fritz Brustat (naval photographer)
- Unsung Sailors: The Naval Armed Guard in World War II**
by Justin F. Gleichauf
- War at Sea: A Naval History of World War II**
by Nathan Miller
- War Beneath the Sea: Submarine Conflict During World War II**
by Peter Padfield
- We Pulled Together and Won! Personal Memories of the World War II Era**
by Reminisce Books

LEADERSHIP, MANAGEMENT AND PERSONAL GROWTH READING

- Built to Last: Successful Habits of Visionary Companies**
by James Collins and Jerry Porras
- Changing the Game: Organizational Transformations of the First, Second, and Third**
by Eric G. Flamholtz, Yvonne Randle and Howard Schultz
- Decision Traps: Ten Barriers to Brilliant Decision-Making and How to Overcome Them**
by J. Edward Russo

- Deep Change: Discovering the Leader Within**
by Robert E. Quinn
- Futurize Your Enterprise: Business Strategy in the Age of the E-customer**
by David Siegel
- Imaginization: New Mindsets for Seeing, Organizing and Managing**
by Gareth Morgan
- In Athena’s Camp: Preparing for Conflict in the Information Age**
by John Arquilla, et al.
- Leadership and Self-deception: Getting Out of the Box**
by Arbinger Institute
- Leadership is an Art**
by Max DePree
- Leadership Without Easy Answers**
by Ronald Heifetz
- Leading Change**
by John P. Kotter
- Managing at the Speed of Change**
by Daryl R. Conner
- The Cluetrain Manifesto: The End of Business as Usual**
by Doc Searls, Christopher Locke, Rick Levine
- The Digital Economy: Promise and Peril in the Age of Networked Intelligence**
by Don Tapscott

- The Digital Estate: Strategies for Competing, Surviving and Thriving in an International World**
by Chuck L. Martin Jr.
- The Human Side of Intranets: Content, Style, and Politics**
by Jerry W. Koehler, et al.
- The Leadership Engine: Building Leaders at Every Level**
by Noel M. Tichy and Eli B. Cohen
- The Lexus and the Olive Tree: Understanding Globalization**
by Thomas L. Friedman
- The Other 90%: How to Unlock Your Vast Untapped Potential for Leadership and Life**
by Robert K. Cooper
- The Power of Alignment: How Great Companies Stay Centered and Accomplish Things**
by George Labovitz and Victor Rosansky
- Who Moved My Cheese? An Amazing Way to Deal With Change in Your Work and in Your Life**
by Spencer Johnson, Kenneth Blanchard

Source: www.chinfo.navy.mil/navpalib/mcpon/readgide.html



TASK FORCE UNIFORM



It's your uniform. Make it a good one.
<http://www.news.navy.mil/local/tfu/>